A COLLECTION OF MESOSTIGMATA (ACARI) ASSOCIATED WITH COLEOPTERA AND HEMIPTERA IN VENEZUELA

BY

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THE BRITISH MUSEUM (NATURAL HISTORY)

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A COLLECTION OF MESOSTIGMATA (ACARI) ASSOCIATED WITH COLEOPTERA AND HEMIPTERA IN VENEZUELA

By K. H. HYATT

THE present contribution is based on a collection of mesostigmatid mites associated with Coleoptera and Hemiptera sent to me by Dr. Carlos Díaz-Ungría, Division de Investigaciones Veterinarias, Maracay, Venezuela.

Twenty-six species are described and figured representing the families Uropodellidae, Macrochelidae, Aceosejidae, Laelaptidae, Diarthrophallidae, Hoplomegistidae, Diplogyniidae, Euzerconidae, Klinckowstroemiidae and Paramegistidae. Sixteen species are considered to be new to science. Holotypes, allotypes and some paratypes are deposited in the Collections of the British Museum (Natural History), whilst further paratypes have been returned to Dr. Díaz-Ungría.

FAMILY UROPODELLIDAE

Genus ***UROPODELLA*** Berlese

Uropodella laciniata Berlese

Uropodella laciniata Berlese, A. 1888. Bull. Soc. ent. Ital. **20** : 214, figs.
Uropodella laciniata, Camin, J. H. 1955. Bull. Chicago Acad. Sci. **10** : 65–81, figs.

Berlese (1888) described this species from specimens collected in Argentina, Brazil and Paraguay, and Camin (1955) examined additional specimens from five states in the U.S.A.

The present collection contains a single deutonymph on a hemipteron of the family Reduviidae, *Leogorrus litura* Fabr. (2207), Pie del Cerro, August 1956.

FAMILY MACROCHELIDAE

Genus ***MACROCHELES*** Latreille

Macrocheles amygdaligera f. interrupta (Berlese)

Holocaeleno (*sic.*) *amygdaligera var. interrupta* Berlese, A. 1918. Redia **13** : 178.

Evans and Hyatt (1963) record *Macrocheles amygdaligera* (Berlese) from *Phanaeus* spp. (Copridae) in several localities in South America. The present collection contains a single female of *f. interrupta* from *Megacephala carolina* L. (Coleoptera, Cicindelidae) (2330), El Agua, Margarita, 27 August 1956.

Macrocheles dimidiatus Berlese

Macrocheles (*Coprholaspis*) *dimidiatus* Berlese, A. 1918. Redia **13** : 163.

Berlese (1918) examined specimens on *Phanaeus* sp. (Coleoptera, Copridae) and *Bombus* sp. (Hymenoptera) from Argentina. Evans and Hyatt (1963) figured *dimidiatus* and added records from Tennessee (U.S.A.), Mexico, Brazil and Paraguay. The present collection contains six females from *Dichotomius* sp. (Coprinae) (1381), Tacagua, 8 December 1955.

Genus ***GLYPTHOLASPIS*** Filipponi and Pegazzano

Glyptholaspis sp. near ***confusa*** (Foà)

Holostaspis confusus Foà, A. 1900. Bull. Soc. ent. Ital. **32** : 137.
Glyptholaspis confusa, Filipponi, A. and Pegazzano, F. 1960. Redia **45** : 154.

Three females from a beetle (coprófagos 2934), Cabure, 14 December 1957, are very similar to the figures and description of *confusa* given by Filipponi and Pegazzano (1960), but differ in dorsal setae D5–D7 being considerably longer.

Glyptholaspis confusa is previously recorded from La Plata in South America, and from Italy, Bulgaria and England in Europe.

Family Aceosejidae

Genus ***MELICHARES*** Hering

Melichares (Blattisocius) keegani Fox

Blattisocius keegani Fox, I. 1947. Ann. ent. Soc. Amer. **40** : 599.
Melichares (*Blattisocius*) *keegani*, Evans, G. O. 1958. Proc. zool. Soc. Lond. **131** : 209, figs.

This species is found commonly in insect cultures and in stored foodstuffs infested with various insects.

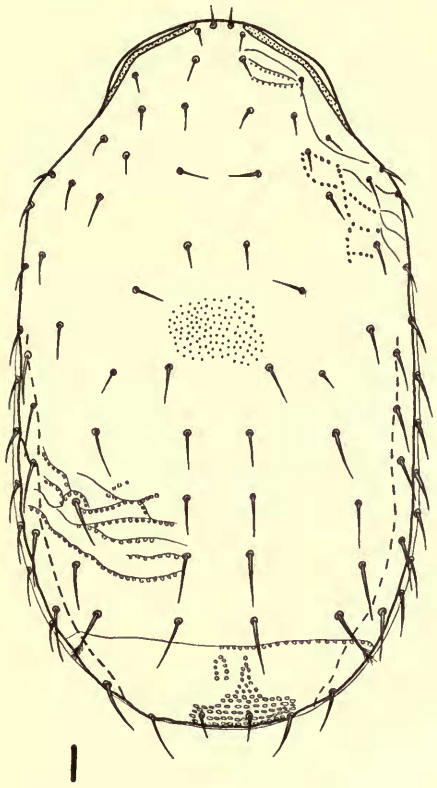
Distribution : Fox (1947) recorded this species from Puerto Rico, and Evans (1958) recorded it from Pahang, Malaya. More recently the British Museum (Natural History) has received specimens from Northamptonshire and Sussex, England. The present collection from Venezuela contains specimens from the following beetles : one larva, one protonymph, two deutonymphs, one male and two females from *Golopha porteri* Hope (Coleoptera, Dynastidae) (2185), Camino de Costa Mara, June 1956 ; one male from *Encaladus gigas* Bonelli (Col., Carabinae) (2236), Cerro Atagua, Margarita, 27 August 1956 ; and one male from *Semiotus imperialis* Guèrin (Col., Elateridae) (3669), Mérida, August 1958.

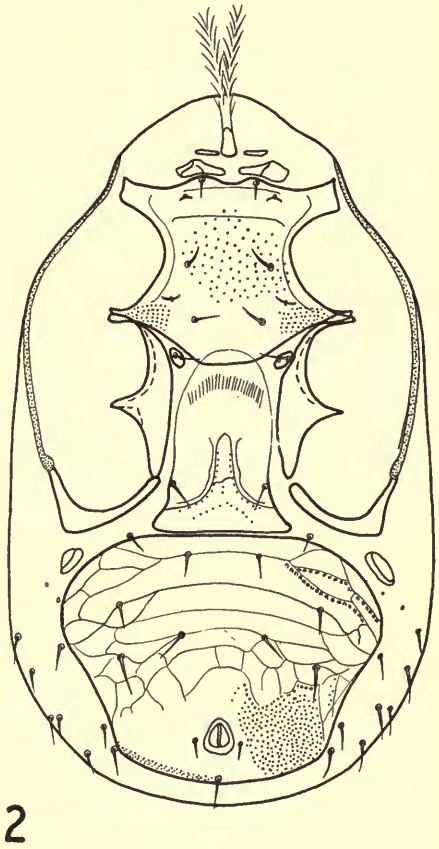
Genus ***ZYGOSEIUS*** Berlese

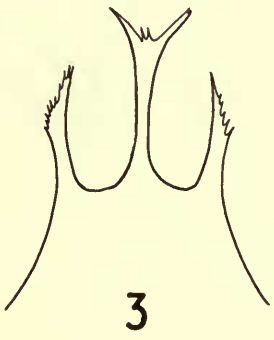
Zygoseius tectus sp. nov.

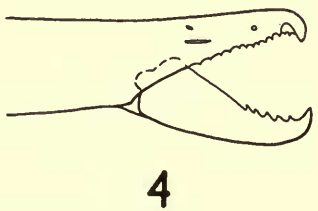
Female : Dorsal shield (540–581μ long × 299–330μ wide) ornamented with punctate lines and porose areas (Text-fig. 1). Chaetotaxy comprising 37 pairs of setae of which all are simple and slender, except for one pair towards the posterior margin of the dorsum which is pilose in its distal third.

Tritosternum slender, with a narrow base and pilose laciniae. Sternal shield large, with porose areas ; anterior margin undulating, posterior margin convex, and bearing three pairs of very short setae (Text-fig. 2). Metasternal setae short. Genital shield, with a pair of simple setae, truncated posteriorly, and abutting the









FIGS. 1–4. *Zygoseius tectus* sp. nov., female. Fig. 1 dorsal shield. Fig. 2 venter. Fig. 3 tectum. Fig. 4 chelicera.

ventri-anal shield. Endopodal shields opposite coxae III and IV broad and conspicuous. Ventri-anal shield broader than long (196–206μ long × 227–268μ wide) reticulated with porose areas posteriorly, and bearing 11 simple setae. Stigma situated between coxae III and IV, peritreme extending anteriorly almost to the vertical setae ; peritrematal shield extending around coxa IV to meet the endopodal shield. Metapodal plates elliptical. Membrane lateral to ventri-anal shield with eight pairs of simple setae.

Venter of gnathosoma with rostral and internal posterior rostral setae long and slender. Setae of pedipalp simple, apotele two-pronged. Tectum (Text-fig. 3) three-pronged, median prong long and forked, lateral prongs shorter and serrated externally. Dentition of chelicerae (Text-fig. 4) as follows : movable digit with five teeth, fixed digit with about 13 small teeth.

All legs with pulvilli and two claws ; no macrosetae on tarsus IV.

Male : Unknown.

Locality : The holotype female (1963.10.3.11) and four paratypes (1963.10.3.12–13) associated with *Hololepra humilis* Payk. (Coleoptera, Histeridae) (3207), San Juan de Manapiare, Amazonas, April 1958.

This species differs from the two previously-known members of the genus, *Z. furciger* Berlese, 1916, from South America and South Africa, and *Z. alter* Vitzthum, 1925, from Sumatra, mainly in the ornamentation of the ventral shields, the dentition of the chelicerae, and especially from *furciger* in the form of the tectum.

Family Laelaptidae

Genus ***GAEOLAELAPS*** Trägårdh

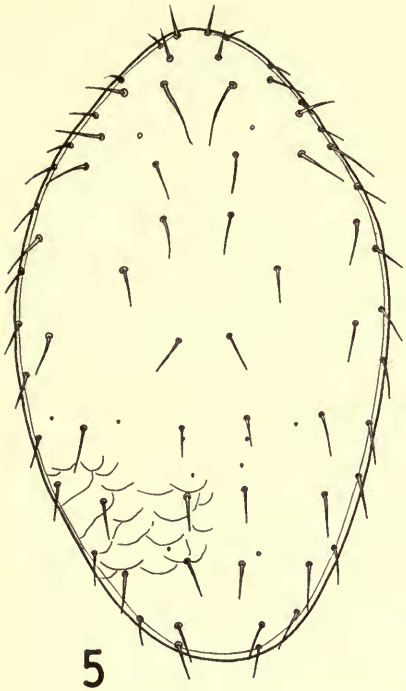
Gaeolaelaps circularis sp. nov.

Female : Dorsal shield (507μ long × 268μ wide) oval in outline, only faintly reticulated, and bearing 33 pairs of simple setae (Text-fig. 5).

Tritosternum small, with pilose laciniae. Pre-endopodal shields weakly sclerotized, but with conspicuous transverse lines. Sternal shield well sclerotized, semicircular posteriorly, and reaching to the anterior third of coxae IV. Reticulations distinct ; the three pairs of sternal setae long (Text-fig. 6). Metasternal setae situated on the membrane posterior to the sternal shield. Genital shield flask shaped, with reticulations, and bearing one pair of simple setae. Anal shield small and bearing the normal three setae associated with the anus. Stigma situated between coxae III and IV, and the peritreme extending beyond coxa I. Membrane posterior to coxae IV with 10 pairs of simple setae. Metapodal plates extremely minute.

Corniculi smooth and slender. Internal posterior rostrals longer than the other three pairs of gnathosomal setae. Chaetotaxy of pedipalp simple. Apotele two-pronged. Tectum (Text-fig. 7) consisting of a single recurved dentate plate. Fixed digit of chelicera with six teeth, movable digit with two teeth (Text-fig. 8).

Figs. 5–10. *Gaeolaelaps circularis* sp. nov., female. Fig. 5 dorsal shield. Fig. 6 venter. Fig. 7 tectum. Fig. 8 chelicera. Fig. 9 tarsus II. Fig. 10 tarsus IV.



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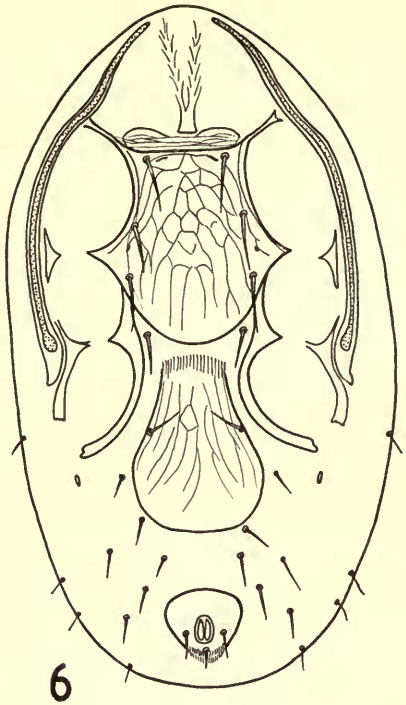

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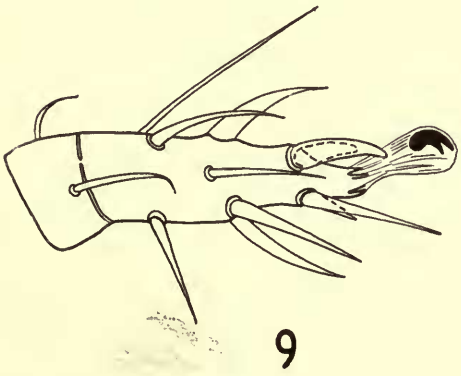

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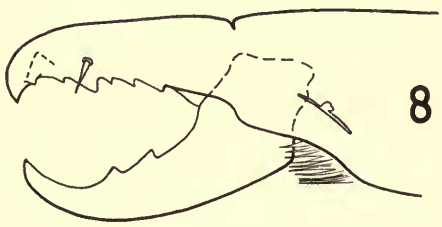

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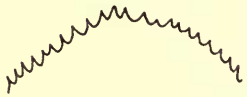

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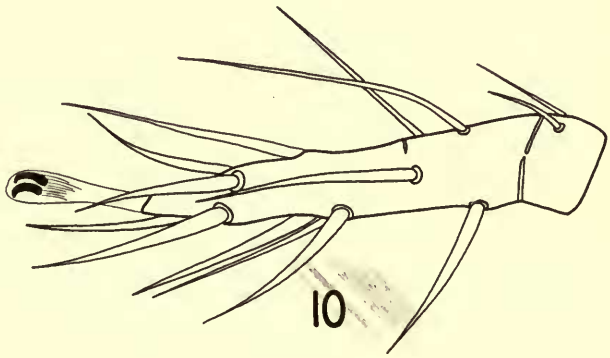

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All setae of leg I fine and simple. Tarsus II with two dorsal spurs distally, and a number of rather stout setae (Text-fig. 9). Tarsus III with a number of stout setae. Tarsus IV slender and with stout setae (Text-fig. 10). All legs provided with pulvilli and two claws.

Male : Unknown.

Locality : A single female, the holotype (1963.10.3.19), from a passalid beetle (2329), Mérida, 3 December 1957.

This species differs from the two previously known members of the genus, *Gaeolaelaps aculeifer* (Canestrini) 1887, a widely distributed species, and *Gaeolaelaps queenslandicus* (Womersley) 1956 (*comb. nov. : sub. Androlaelaps*), from Queensland, in not possessing a stout spine on femur II, in the shape of the posterior margin of the genital shield, and in the dentition of the chelicerae.

Genus ***HYPOASPIS*** G. Canestrini

Hypoaspis passali sp. nov.

Female : Dorsal shield (764μ long × 477μ wide) with some faint reticulation and bearing about 48–50 pairs of well developed simple setae ; there being some neotrichy posteriorly (Text-fig. 11).

Tritosternum with a narrow base and long pilose laciniae. Pre-endopodal shields very weakly sclerotized and with faint transverse lines. Sternal shield completely covered with faint reticulations and bearing three pairs of long simple setae (Text-fig. 12). Genital shield broadly flask shaped, reticulated and with one pair of simple setae. Anal shield pear shaped and with three simple setae. Stigma situated between coxae III and IV, peritreme extending to the anterior margin of coxa I ; peritrematal shield extending a short distance behind the stigma. Interscutal membrane with up to thirty pairs of setae extending a little anterior to the stigma. Metapodal plates narrow.

Corniculi short and broad. Internal posterior rostrals the longest of the gnathosomal setae. Chaetotaxy of pedipalps consisting of simple setae ; apotele two pronged. Tectum a broad plate with serrated recurved anterior margin (Text-fig. 13). Fixed digit of chelicera with two large and about 12 small teeth movable digit with two teeth (Text-fig. 14).

All legs with a long slender pulvillus and two claws. Chaetotaxy entirely of simple setae, finest on leg I ; stouter setae on legs II to IV.

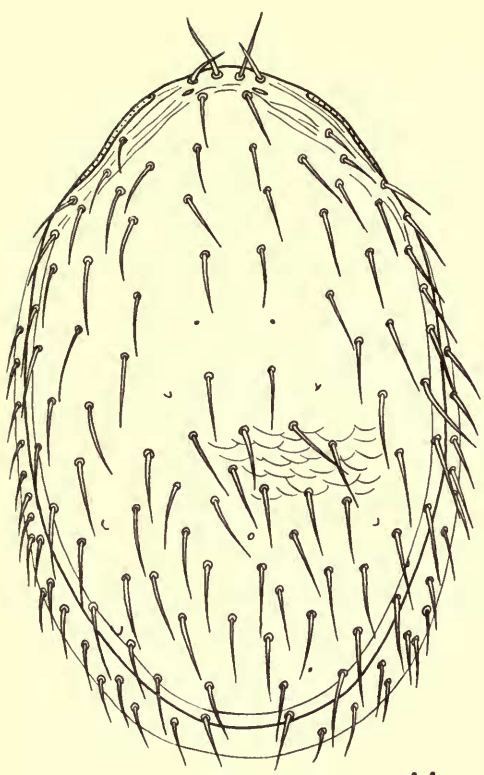
Male : Unknown.

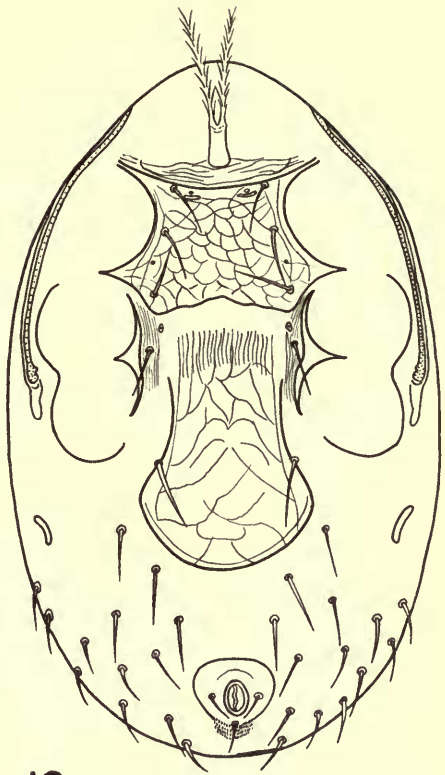
Locality : A single female, the holotype (1963.10.3.20), from a passalid beetle (2496), Río Caura, Bolívar, Venezuela, May 1957.

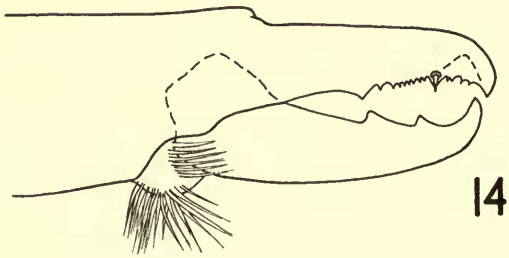
Genus ***COLEOLAELAPS*** Berlese

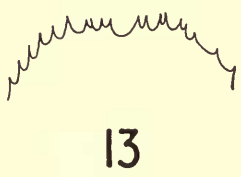
Coleolaelaps metasternalis sp. nov.

Female : Dorsal shield (920–1034μ long × 507–540μ wide) finely granular and with very faint reticulations covering most of its surface, and bearing about 27 pairs of simple setae, the shortest being about 25μ and the longest about 330μ.



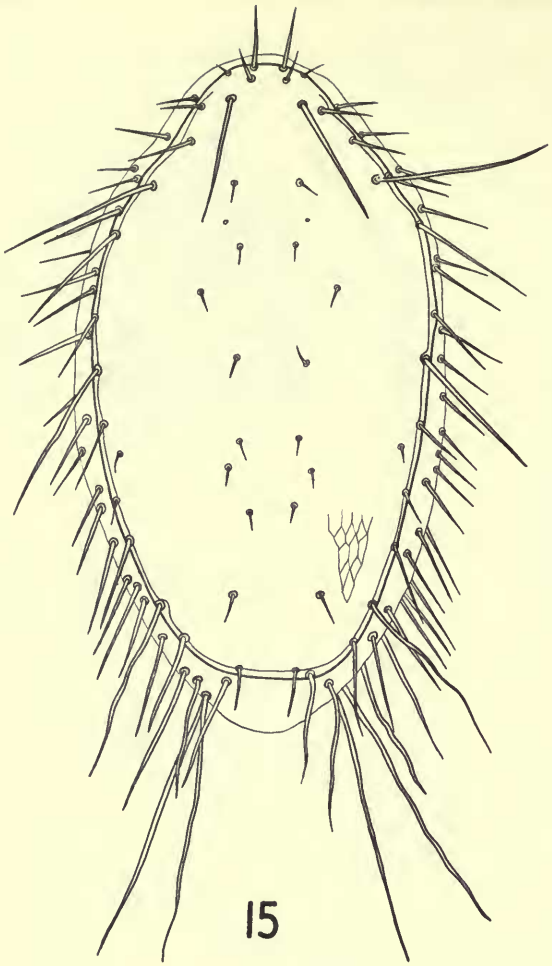






FIGS. 11–14. *Hypoaspis passali* sp. nov., female. Fig. 11 dorsum. Fig. 12 venter. Fig. 13 tectum. Fig. 14 chelicera.

In the holotype (the figured specimen) one of the posterior dorsal setae is off the shield, though in the majority of the specimens examined it is situated on the edge of the shield (Text-fig. 15).



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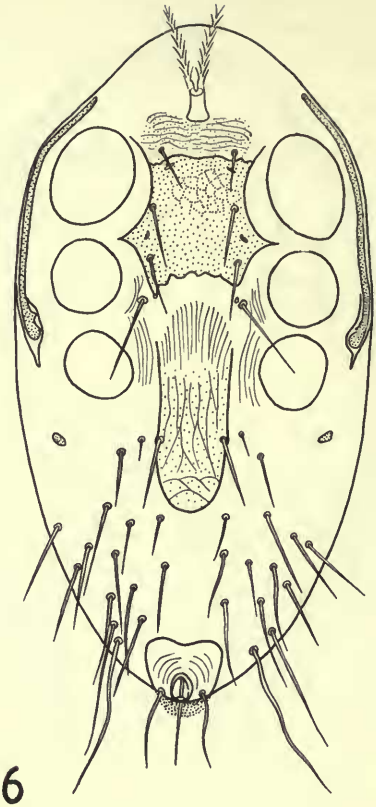

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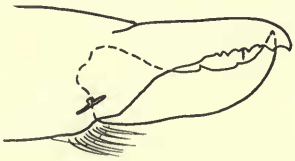

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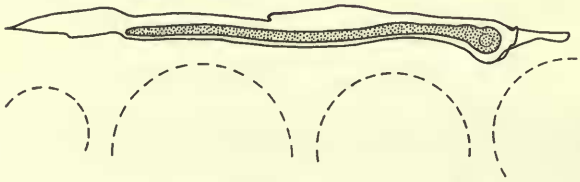

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Tritosternum normal. Pre-endopodal shields very weakly sclerotized, granular and reticulated. Sternal shield finely granular. Sternal setae I apparently off the shield, sternal setae II–III long (Text-fig. 16). Metasternal setae long, situated on the interscutal membrane. Genital shield finely granular and reticulated. Anal shield granular ; the three setae long. Peritreme extending to about the posterior margin of coxa I ; peritrematal shield projecting a little posterior to the stigma (Text-fig. 17). Metapodal shields very small, granular. Membrane posterior to the genital shield with about 15 pairs of setae varying in length ; lateral interscutal membrane with chaetotaxy as in Text-figure 15.

Corniculi short and blunt. Internal posterior rostrals longest of gnathosomal setae. Chaetotaxy of pedipalp simple ; apotele with two prongs. Tectum irregular in outline, partly denticulate (Text-fig. 18). Fixed digit of chelicera with about six small teeth, movable digit with two teeth (Text-fig. 19).

All setae on leg I simple. Tarsus II with five slender spines ; tarsi III and IV each with three slender spines. All legs with a well-developed pulvillus and two claws.

Male : Unknown.

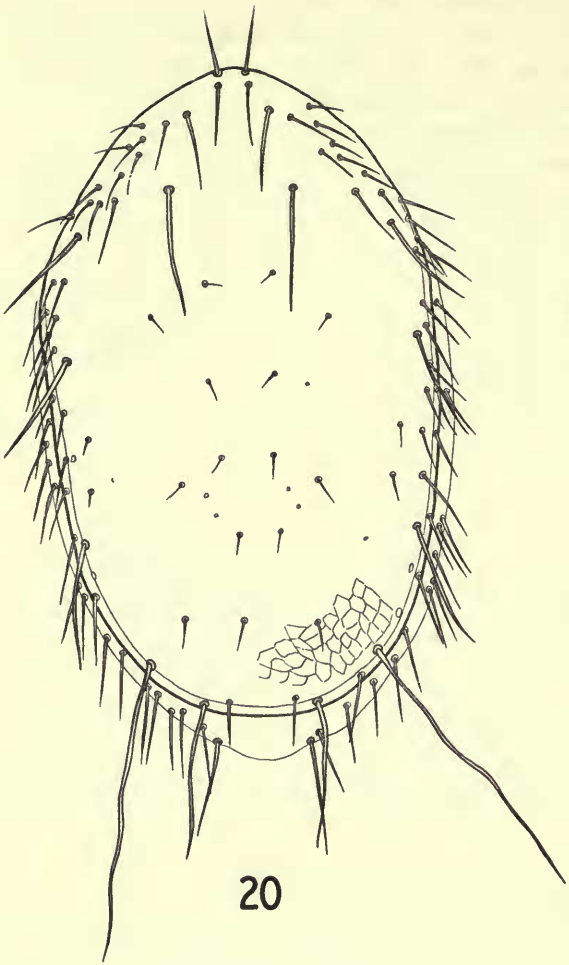
Localities : The holotype female (1963.10.3.21) and 29 paratypes (1963.10.3.22–31) from a scarabaeid beetle (2184), Cota, 1,000 metres altitude, June 1956 ; one paratype (1963.10.3.32) from a scarabaeid (2167), El Junquito, June 1956 ; 91 paratypes (1963.10.3.33–42) from *Golopha porteri* (Col., Dynastidae) (2183), El Avila, June 1956 ; four paratypes (1963.10.3.43–44) from *Golopha porteri* (2185), Camino de Costa Mara, June 1956 ; 51 paratypes (1963.10.3.45–54) from *Heterogomphus* sp. (Dynastidae) (2186), Chaguaramos, 22 June 1956 ; 11 paratypes (1963.10.3.55–59) from *Golopha porteri* (2851), El Avila, Distrito Federal, June 1957 ; and over 50 paratypes (1963.10.3.60–69) from *Golopha porteri* (2864), Colonia Tovar, August 1957.

Coleolaelaps coxalis sp. nov.

Female : Dorsal shield (880–973μ long × 550–600μ wide) finely granular, with very faint reticulations covering much of its surface, and bearing about 43 pairs of simple setae, the shortest being *c.* 30μ and the longest (one posterior pair) *c.* 450μ (Text-fig. 20).

Tritosternum strongly developed, with long laciniae. Pre-endopodal area weakly granular and striated. Sternal shield with faint reticulations, strongly granular, and with three pairs of long simple setae (Text-fig. 21). Metasternal setae long. Genital shield long and narrow, finely granular and reticulated. Genital setae almost off the shield. Anal shield granular, setae simple. Peritreme extending to about the middle of coxa I ; peritrematal shield projecting a little posterior to the stigma. Metapodal shields very small, granulate. Membrane posterior to the genital shield with over 25 pairs of setae.

Figs. 15–19. *Coleolaelaps metasternalis* sp. nov., female. Fig. 15 dorsum. Fig. 16 venter. Fig. 17 peritreme. Fig. 18 tectum. Fig. 19 chelicera.



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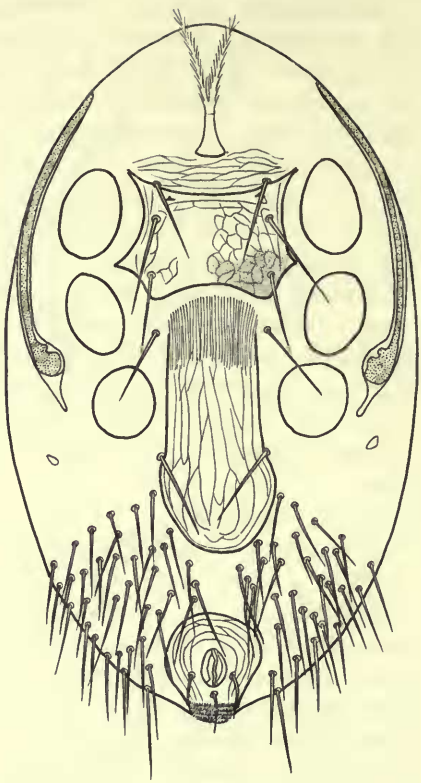

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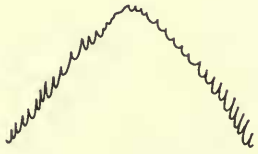

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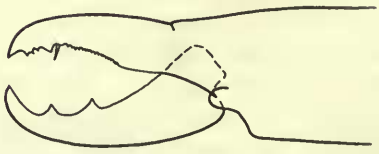

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FIGS. 20–24. *Coleolaelaps coxalis* sp. nov., female. Fig. 20 dorsum. Fig. 21 venter. Fig. 22 tectum. Fig. 23 chelicera. Fig. 24 coxa II.

Corniculi long and slender. All gnathosomal setae long, though internal posterior rostrals longest. Chaetotaxy of pedipalp simple ; apotele two pronged. Tectum denticulate (Text-fig. 22). Fixed digit of chelicera with two large teeth and a row of very minute teeth ; movable digit with two large teeth (Text-fig. 23).

All setae on leg I fine and simple. Coxa II with an anteriorly-directed spur (Text-fig. 24) ; tarsus II with three and tibia with two ventral spines ; all setae simple. Tarsus III with three, tibia with two, and genu with two ventral spines ; all setae simple. Tarsus IV with three, tibia with two, genu with one, and femur also with one, ventral spines. Femora II–IV with one long seta. All legs with a pulvillus and two claws.

Male : Unknown.

Localities : The holotype female (1963.10.3.70) and over 100 paratypes (1963.10.3.71–80) from *Megosoma elephas* (Col., Dynastidae) (2182), Morón, June 1956 ; and 23 paratypes (1963.10.3.81–90) from *Oryctes* sp. (Col., Scarabaeidae) (1382), El Junquito, 14 December 1955.

Coleolaelaps striatus sp. nov.

Female : Dorsal shield (848–920μ long × 498–550μ wide) finely granular with occasional traces of reticulations, and bearing 30 pairs of simple setae, the shortest being about 38μ and the longest about 240μ (Text-fig. 25).

Tritosternum with well-developed laciniae. Pre-endopodal area weakly sclerotized and granular. Sternal shield characteristically reticulated, pattern arranged longitudinally, finely granulate and bearing three pairs of long setae (Text-fig. 26). Metasternal setae long. Genital shield granular, well reticulated. Anal shield reticulated, setae long. Peritreme extending to about the middle of coxa I ; peritrematal shield tapering a little beyond the stigma. Metapodal shields very small, granulate. Membrane posterior to the genital shield with about 25 pairs of setae.

Corniculi slender. Internal posterior rostrals twice the length of the other gnathosomal setae. Chaetotaxy of pedipalp simple ; apotele with two prongs. Tectum almost completely devoid of denticulations (Text-fig. 27). Fixed digit of chelicera with one large tooth and about eight small ; movable digit with two large teeth (Text-fig. 28).

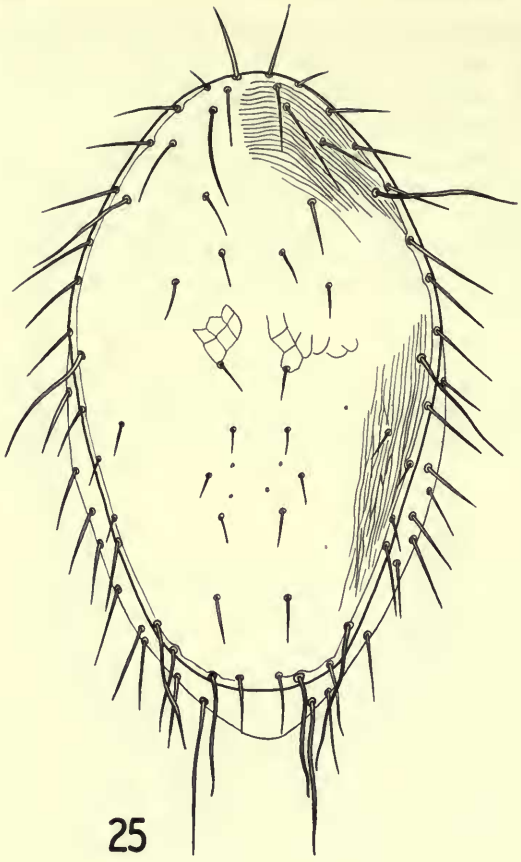
All setae on leg I simple. Tarsus II with five, tarsus III with three and tibia with two, tarsus IV with five, tibia with two and genu with one, ventral spines or stout setae. Remaining setae simple. All legs with a pulvillus and two claws.

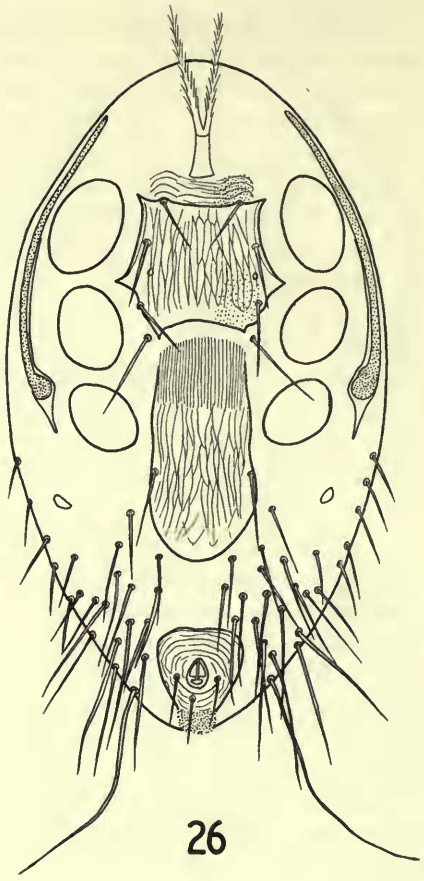
Male : Unknown.

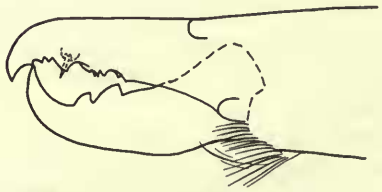
Locality : The holotype female (1963.10.3.91) and one paratype (1963.10.3.92) from *Dynastes* sp. (Col., Dynastidae) (2860), Caracas, August 1957.

" Coleolaelaps " granulatus sp. nov.

Female : Dorsal shield (805–837μ long × 540–581μ wide) finely granular and bearing 19 pairs of setae, the shortest being about 20μ and the longest about 380μ (Text-fig. 29).

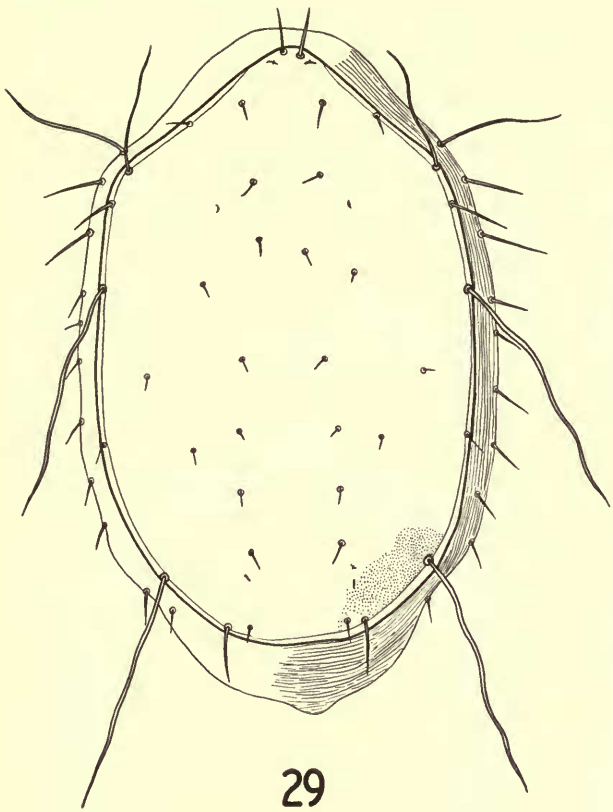


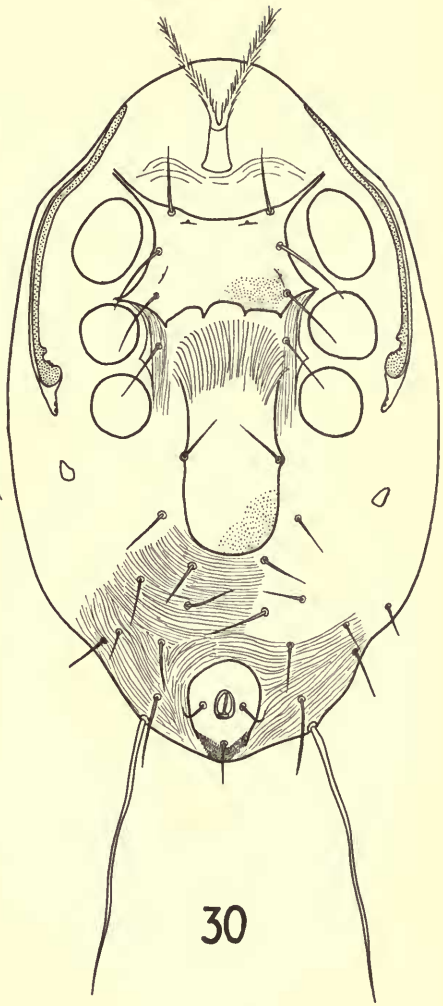


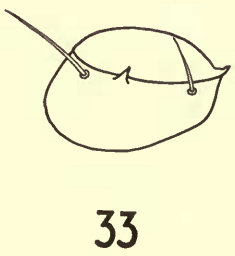


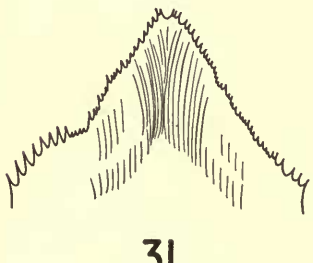
FIGS. 25–28. *Coleolaelaps striatus* sp. nov., female. Fig. 25 dorsum. Fig. 26 venter. Fig. 27 tectum. Fig. 28 chelicera.

Tritosternum normal, with pilose laciniae. Pre-endopodal area weakly sclerotized. Sternal shield shallow, granulate, weakly sclerotized, and with posterior margin irregular. Sternal setae long (Text-fig. 30). Metasternal and genital setae shorter than sternal setae. Genital shield weakly sclerotized, granulate. Anal shield ovoid, without ornamentation. Peritreme extending to the middle of coxa I ;









FIGS. 29–33. *" Coleolaelaps " granulatus* sp. nov., female. Fig. 29 dorsum. Fig. 30 venter. Fig. 31 tectum. Fig. 32 chelicera. Fig. 33 coxa II.

peritrematal shield tapering a little beyond the stigma. Metapodal shields very small. Membrane posterior to the genital shield with about nine pairs of setae.

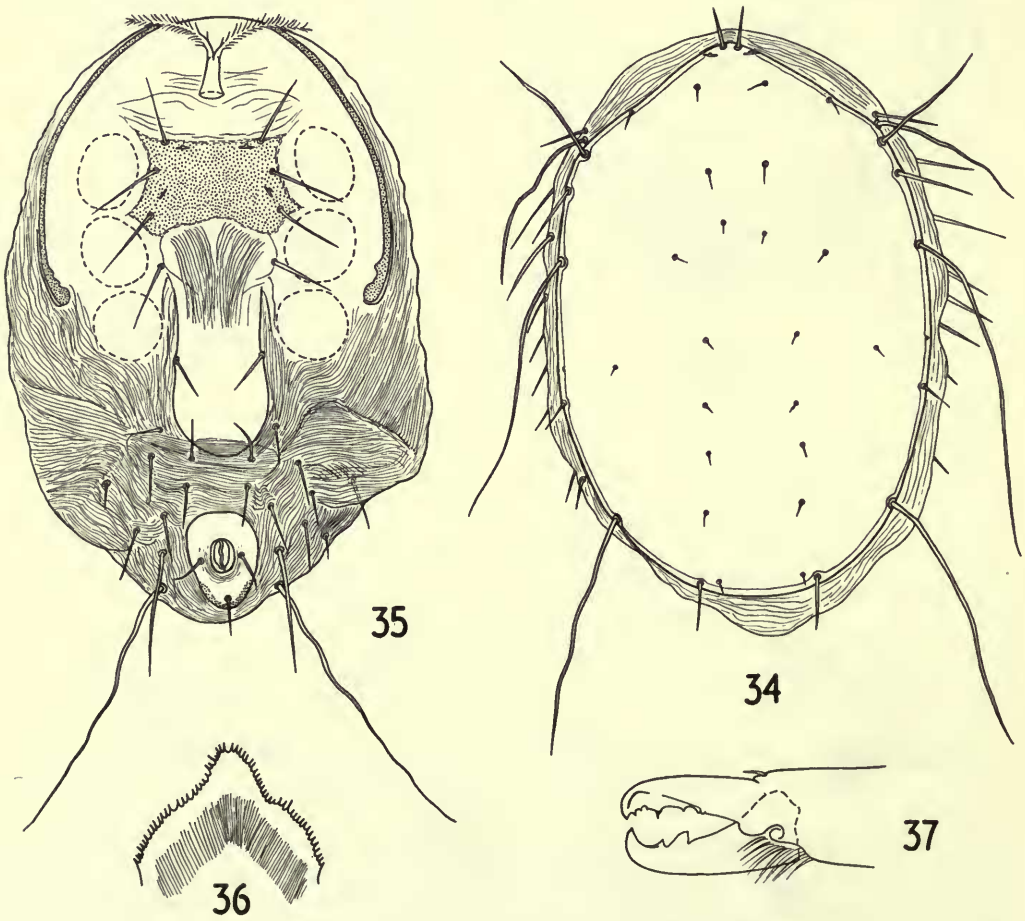
Corniculi long and slender. Internal posterior rostrals longest of gnathosomal setae. Chaetotaxy of pedipalp simple ; apotele with two prongs. Tectum entirely denticulate (Text-fig. 31). Fixed digit of chelicera with one large and about six small teeth ; movable digit with two large teeth (Text-fig. 32).

All setae on legs simple. Tarsus I with claws markedly reduced ; tarsi II–IV with well developed claws. Legs II–IV with some stout setae. Coxae II with a small anteriorly-projecting spur (Text-fig. 33).

MALE : Unknown.

LOCALITY : The holotype female (1963.10.3.93) and one paratype (1963.10.3.94) from a scarabaeid beetle (2684), Río Caura, Bolívar, Venezuela, May 1957.

This and the following species differ mainly from typical *Coleolaelaps* in the



FIGS. 34–37. *" Coleolaelaps " latisternalis* sp. nov., female. Fig. 34 dorsum. Fig. 35 venter. Fig. 36 tectum. Fig. 37 chelicera.

complete reduction of the claws on leg I and in the reduction in number of the dorsal setae. It may well prove necessary, when more material has been examined, to propose new taxa for the reception of these species.

" Coleolaelaps " latisternalis sp. nov.

Female : Dorsal shield (795–826μ long × 518–591μ wide) finely granular, devoid of any ornamentation, and bearing 18 pairs of simple setae of which 11 pairs are extremely short (*c.* 25μ) and the longest pair is up to 450μ (Text-fig. 34).

Tritosternum well developed with pilose laciniae. Pre-endopodal shields almost non-existent, discernible only as faint marks on the membrane. Sternal shield broad, granular, weakly sclerotized, and bearing three pairs of long setae (Text-fig. 39). Metasternal setae situated on the membrane. Genital shield without ornamentation, setae simple. Anal shield also without ornamentation and bearing three simple setae. Peritreme extending to the middle of coxa I. Peritrematal shield very narrow, scarcely noticeable, not extending posterior to the stigma. Metapodal plates apparently absent. Membrane posterior to the genital shield with about nine pairs of setae, of which one pair is extremely long (*c.* 450μ).

Corniculi long and slender. Internal posterior rostrals longer than other gnathosomal setae. Chaetotaxy of pedipalps simple ; apotele with two prongs. Tectum (Text-fig. 36) finely denticulate along its outer margin. Fixed digit of chelicera with six small teeth and one large ; movable digit with two large teeth (Text-fig. 37).

Claws on leg I markedly reduced ; legs II–IV with well developed claws. Chaetotaxy of legs simple.

Male : Unknown.

Locality : The holotype female (1963.10.3.95) and 22 paratypes (1963.10.3.96–105) from a scarabaeid beetle (2685), Río Caura, Bolívar, May 1957.

Family Diarthrophallidae

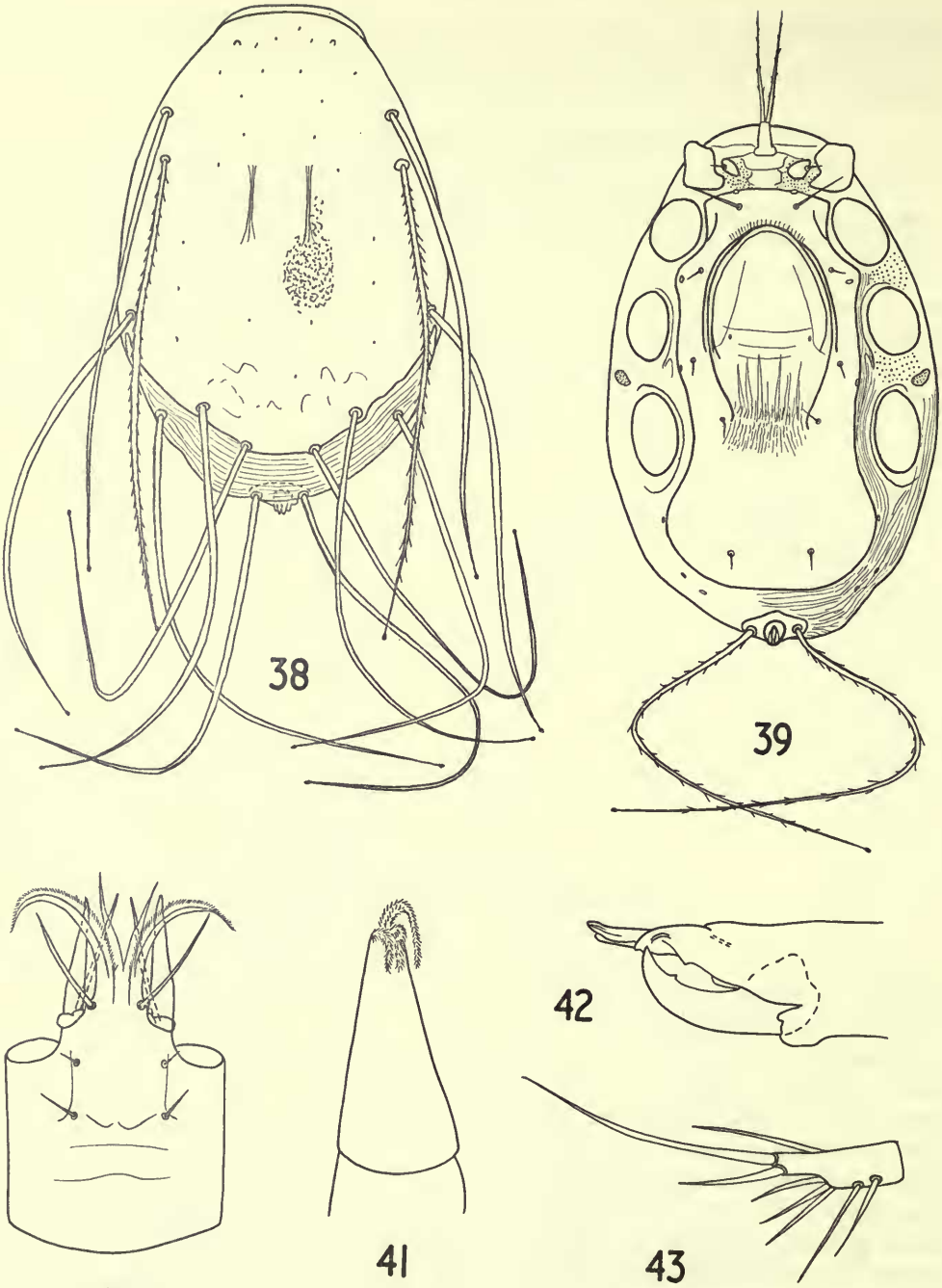
Genus *BRACHYTREMELLA* Trägårdh

Brachytremella womersleyi sp. nov.

Female : Dorsal shield (430μ long × 291μ wide) smooth and weakly sclerotized ; bearing five pairs of long stout pilose setae (up to 460μ) and a number of extremely minute setae (Text-fig. 38).

Tritosternum with a short base and slender, barely pilose, laciniae. Presternal setae on discrete platelets. As in other members of the Diarthrophallidae the sterniti-genital shield extends almost to the anal shield. The epigynial shield is large and tongue shaped and is not articulated at the base (Text-fig. 39). Sternal setae I are three times the length of sternal setae II–IV. A further pair of short setae is situated near the posterior margin of the sterniti-genital shield. The anal shield is small and bears (as appears throughout the family) a pair of stout long paranal setae, and no postanal seta. Stigma and peritreme typical of the family.

Corniculi long and slender ; the tips curving outwards a little (Text-fig. 40). Rostral setae very long ; posterior rostrals very short and represented by only one pair, the internals being absent. Capitular setae short also. Femur of pedipalp



FIGS. 38–43. *Brachytremella womersleyi* sp. nov., female. Fig. 38 dorsum. Fig. 39 venter. Fig. 40 venter of gnathosoma. Fig. 41 tectum. Fig. 42 chelicera. Fig. 43 tarsus I.

with a long pilose seta dorsally ; tibia with two long slender setae distally, and tarsus with one long seta. Remaining chaetotaxy consisting of short fine setae. Tectum with three laciniate digits (Text-fig. 41). Chelicera as in Text-figure 42.

Leg I 177μ long. Tarsus I without ambulacrum (Text-fig. 43), but with a long terminal seta ; genu with one long pilose lateral seta ; femur with one long dorsal seta ; remaining setae on legs simple. Leg II 233μ long. Femur with a long pilose seta distally ; remaining setae simple. Ambulacrum without claws. Leg III 240μ long. Femur and genu each with a long pilose seta distally ; remaining setae simple ; ambulacrum without claws. Leg IV 240μ long, similar to leg III.

Locality : A single female (1963.10.3.106) from *Passalus flascala* (Col., Passalidae) (1387), Pie del Cerro, January 1956.

The family Diarthrophallidae has been discussed in detail recently by Womersley (1961, 1961a) and his concept of *Brachytremella* is followed.

Family Hoplomegistidae

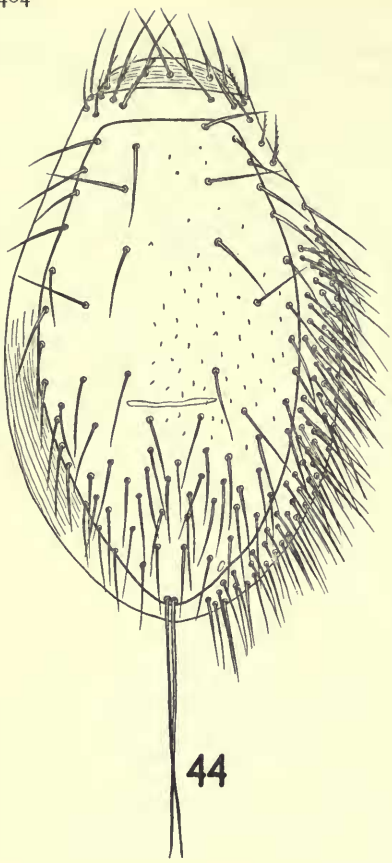
Genus ***HOPLOMEGISTUS*** Berlese

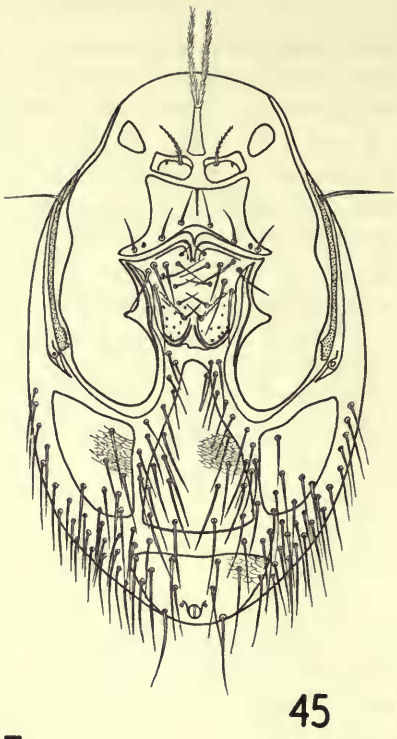
Hoplomegistus bicrinus Berlese

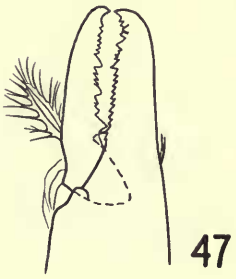
Hoplomegistus bicrinus Berlese, A. 1918. Redia **13** : 142.

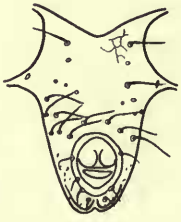
Female : Dorsal shield (1,260μ–1,290μ long × 640–693μ wide) densely granular, and bearing about 36 pairs of simple setae of which one pair on the posterior border of the shield has the bases touching and are about 480μ long (Text-fig. 44). The dorsal shield bears also numbers of distinct pores. Anterior to the dorsal shield, and separated from it by membrane, is a narrow sclerotized strip bearing seven setae. The membrane surrounding the dorsal shield bears a large number of simple setae as shown in the figure. In some specimens the interscutal membrane is sclerotized and forms an extension of the dorsal shield.

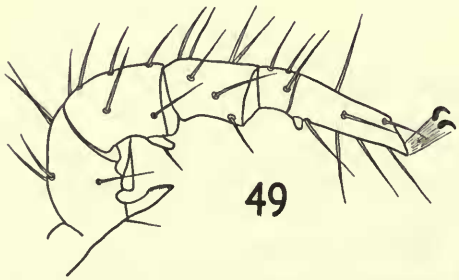
Tritosternum with a narrow base and pilose laciniae. Jugularia well sclerotized ; setae long and bipectinate. Sternal shield narrowest in the middle and bearing three pairs of simple setae along its concave posterior margin (Text-fig. 45). Latigynial shield fused medially and bearing ten pairs of setae. The most anterior pair is very short. These are followed by a posterior row of four pairs of long setae, and posterolaterally a further two pairs of long setae. Medially are three pairs of short setae. The pore-field in the posterior half of the latigynial shield is clearly divided into two areas. The ventral shield is roughly triangular, rounded anteriorly, and slightly convex posteriorly. It bears about seven pairs of simple setae and is flanked by about 12 pairs of setae, although neither those on the shield, nor on the surrounding membrane, are arranged symmetrically. Ventri-anal shield broader than long (*c.* 280μ × 290μ) and with about six pairs of setae. Lying along the posterior margin of the ventri-anal shield is a pair of platelets (not shown in Text-fig. 45) each bearing a single seta. Endopodal shields surrounding coxae III and fused with the peritrematal shield. Stigma between coxae III and IV ; peritreme extending to coxa I ; peritrematal shield with a strong seta opposite coxa II.

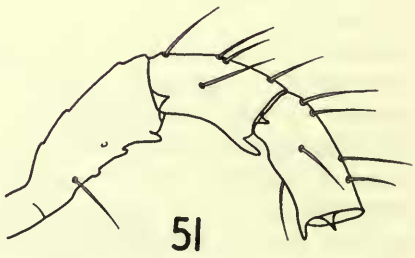












FIGS. 44–51. *Hoplomegistus bicrinus* Berlese. Fig. 44 dorsum of female. Fig. 45 venter of female. Fig. 46 tectum of female. Fig. 47 chelicera of female. Fig. 48 sternitigenital shield of male. Fig. 49 leg II of male. Fig. 50 femur III of male. Fig. 51 leg IV of male.

Corniculi pointed, noticeably horn-like in appearance. Gnathosomal setae long, arranged almost in a straight line. Majority of pedipalpal setae simple, remainder finely pilose on one or both margins. Apotele with two slender prongs. Tectum (Text-fig. 46) a sclerotized triangular plate. Fixed digit of chelicera with a large basal tooth and about 22 smaller teeth ; movable digit with three large teeth and 11 small teeth (Text-fig. 47).

Leg I 1,601μ long, without ambulacrum ; all setae fine although some pilose. Legs II–IV with a pulvillus and two claws ; all setae simple. Tarsus IV with a long seta distally. Leg II 1,240μ long, leg III 1,340μ, leg IV 1,810μ.

Male : Dorsal shield (1,350–1,728μ long × 795–983μ wide) similar in structure and chaetotaxy to the female. As in the female, the interscutal membrane in some specimens is sclerotized.

The sterniti-genital shield (Text-fig. 48) bears at least a dozen pairs of setae, although as they are not arranged symmetrically, and some are broken off in all the specimens examined, it is not possible to be sure of the exact number present. The remaining sclerotization and chaetotaxy of the venter are similar to that of the female.

Venter of gnathosoma, tectum, chelicerae, and chaetotaxy of pedipalp as in the female.

Leg I very slender ; setae fine, some pilose. Leg II (Text-fig. 49) with two ventral spurs on the femur, one on the genu, and one on the tarsus. A small ventral spur and two small excrescences on the femur are the only noticeable armature on leg III (Text-fig. 50). There is, however, in addition to the normal simple chaetotaxy, a long erect seta on genu III. On leg IV the tarsus is unarmed, but the tibia has one ventral and one lateral spur at its distal end, and the genu is similarly armed, whilst the femur is similar to that of leg III, having a spur and two small excrescences ventrally (Text-fig. 51). The chaetotaxy of legs II–IV is simple. Tarsus IV has three long erect setae dorsally. Legs II–IV with a pulvillus and two claws.

The specimens examined (15 ♂♂ and 37 ♀♀) show considerable variation in the degree of sclerotization of the interscutal membranes, both dorsal and ventral, in the amount of reticulation of the ventral shields (completely lacking in some specimens), and in the arrangement and lengths of setae on the ventral shields. The figures given of the dorsum (Text-fig. 44) and venter (Text-fig. 45) are fairly typical.

Distribution : Berlese (1918) was unable to give a locality for *H. bicrinus* (" *Habitat ubi?* "), and since that date this species has not appeared in the literature. The present collection from Venezuela includes the following specimens : nine males and 22 females from *Passalus flascala* Perch (Col., Passalidae) (1387), Pie del Cerro, January 1956 ; one male from *Passalus ? flascala* (1384), Los Chorros, January 1956 ; one male from *Passalus ? flascala* (2258), Copey, September 1956 ; one male and three females from a passalid beetle (2329), Mérida, 3 December 1956 ; two males and three females from a passalid (2675), Río Caura, Bolívar, May 1957 ; one male from a passalid (2932), Cabure, 14 December 1957 ; and nine females from passalids (3256 and 3259), San Juan de Manapiare, Amazonas, April 1958.

For the present, the specimens from Venezuela are identified with *Hoplomegistus bicrinus* Berlese, 1918, as they compare very favourably with Berlese's description, especially in the presence of the two long setae situated medially at the posterior of the dorsal shield, and in the armature of the legs. Several other related species, e.g. *Megisthanus balzani* Canestrini, 1896 (figured by Canestrini, 1897) ; *Hoplomegistus armiger* Berlese, 1888 (figs.) and figured subsequently by Stoll (1892) and Turk (1948) ; and *Hoplomegistus trapeziger* Berlese, 1910 ; and *Hoplomegistus tragardhi* Baker & Wharton, 1952, are neither described nor figured in enough detail to be absolutely sure of their identity. When a detailed revision can be made of the Hoplomegistidae and Megisthanidae it may be found that a number of the described species of these large and conspicuous mites can be synonymized.

Family Diplogyniidae

Genus ***TRICHODIPLOGYNIUM*** Trägårdh

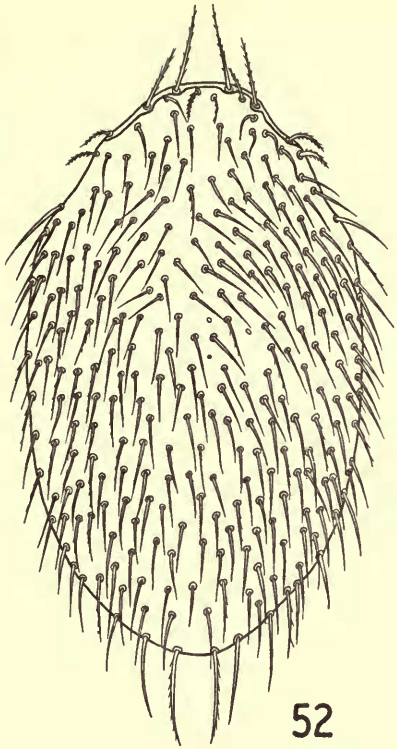
Trichodiplogynium carlosi sp. nov.

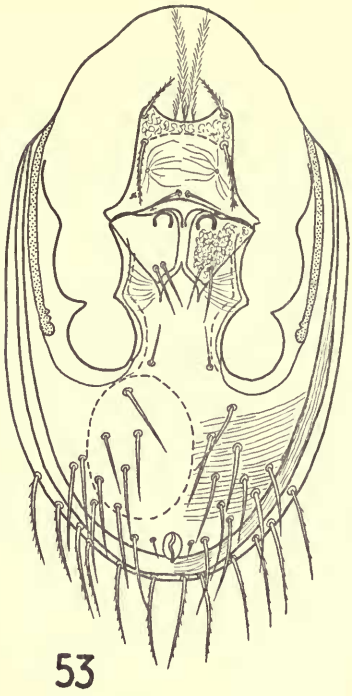
Female : Dorsal shield (743–764μ long × 446–488μ wide) bearing about 270 setae not entirely arranged symmetrically (Text-fig. 52). Two vertical pairs are slightly pilose and directed anteriorly. A number of the other setae also show slight pilosity. The marginal setae increase in length progressively towards the posterior.

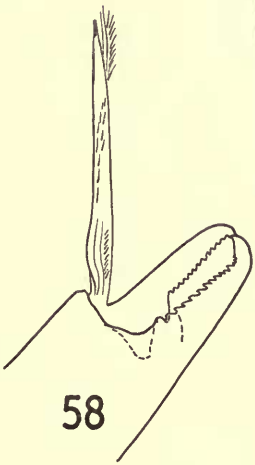
Base of tritosternum greatly reduced ; the two laciniae very fine and pilose. Sternal shield broad, parallel sided, widening posteriorly, concave and heavily sclerotized anteriorly, and bearing three pairs of setae of which the anterior two pairs are finely pilose and the median posterior pair simple (Text-fig. 53). The lyriform lateral shields bear two pairs of setae situated close together and near the posterior margin. The fused ventral and anal shields cover the entire ventral area posterior to the genital region, with the exception of the surrounding strip of membrane and the underlying margin of the dorsal shield. The endopodal shields appear as a thickened border to the ventral shields. The chaetotaxy of the ventro-anal area comprises one pair of setae between coxae IV, ten pairs of long setae posterior to coxae IV, and a pair of very short setae lateral to the anus. Post-anal seta absent. Stigma situated opposite the anterior part of coxa IV, and peritreme extending anteriorly to the level of coxa I.

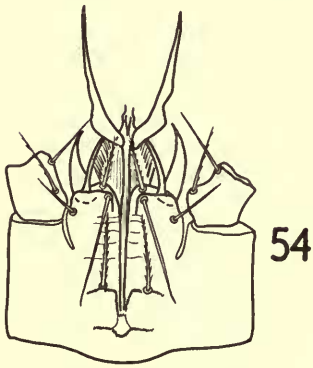
Venter of gnathosoma shown in Text-figure 54. Corniculi long and incurved. Rostral, external posterior rostral and capitular setae faintly pilose. Internal posterior rostrals situated close to rostrals and about twice as long as the other setae. Chaetotaxy of pedipalp simple ; setae on femur and genu long. Apotele two pronged. Fixed digit of chelicera with about 16 small teeth ; movable digit with one large basal tooth and about 14 small teeth (Text-fig. 55). Tectum as in Text-figure 56.

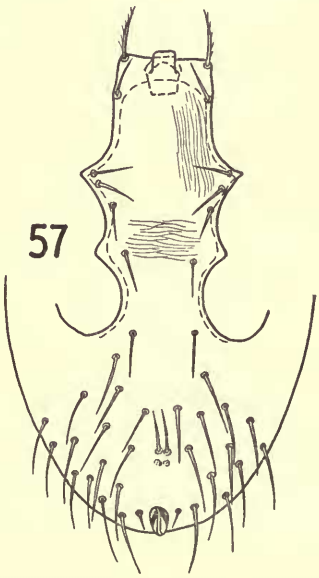
Leg I 930μ long, slender, though noticeably swollen in its distal half. Majority of setae long and fine ; some pilose. Legs II–IV with a pulvillus and two claws. Chaetotaxy comprising slender setae only with some slightly pilose. Tarsus IV has a long basal seta dorsally.

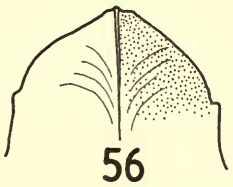












FIGS. 52–58. *Trichodiplogynium carlosi* sp. nov. Fig. 52 dorsal shield of female. Fig. 53 venter of female. Fig. 54 venter of gnathosoma of female. Fig. 55 chelicera of female. Fig. 56 tectum of female. Fig. 57 holoventral shield of male. Fig. 58 chelicera of male.

Male : Dorsal shield (743–848μ long × 435–507μ wide) very similar to the female. The ventral and anal shields are fused to form the holoventral shield (Text-fig. 57) which covers the entire venter, except for the narrow surrounding membrane and the underlying margin of the dorsal shield as in the female. The intercoxal region bears seven pairs of setae of which sternal setae I are finely pilose. Posterior to coxae IV are 11–16 pairs of setae (excluding the anal setae) of which one central pair has the bases contiguous. The endopodal shields appear as a thickened border to the ventral shield.

Venter of gnathosoma similar to female, but internal posterior rostral setae equal in length to other rostral setae. Tectum and pedipalp as in the female. Dentition of chelicerae similar to the female, but synarthrodial brush twice as long as the movable digit (Text-fig. 58).

Leg I 910μ long. Chaetotaxy of legs simple as in the female. Tarsus IV apparently lacking the long dorsal seta of the female.

Locality : The holotype female (1963.10.3.130), allotype male (1963.10.3.131), and 27 male and 33 female paratypes (1963.10.3.132–141) from a passalid beetle (2651), Río Caura, Bolívar, May 1957.

Hitherto only four species of the genus have been described ; all by Trägårdh (1950). Two, *bipilis* and *surinamense* are known only from the female ; *sahlbergi* is known only from the male ; and *hirsutum* is known from both sexes. The female of the present species bears two pairs of setae on the lateral shields as in *bipilis*, but they are situated on the posterior borders of the shields and not one each anteriorly and posteriorly as in that species. The male of the present species is closest to *sahlbergi* in that the synarthrodial brush is twice as long as the movable digit, but the ventri-anal area bears only seven pairs of setae as opposed to about 30 pairs in *sahlbergi*. *T. carlosi* bears about 260 pairs of dorsal setae whereas all of Trägårdh's species bear in the region of 300 pairs of setae.

This new species of *Trichodiplogynium* is dedicated to Dr. Carlos Díaz-Ungría.

Genus ***HETERODIPLOGYNIUM*** Trägårdh

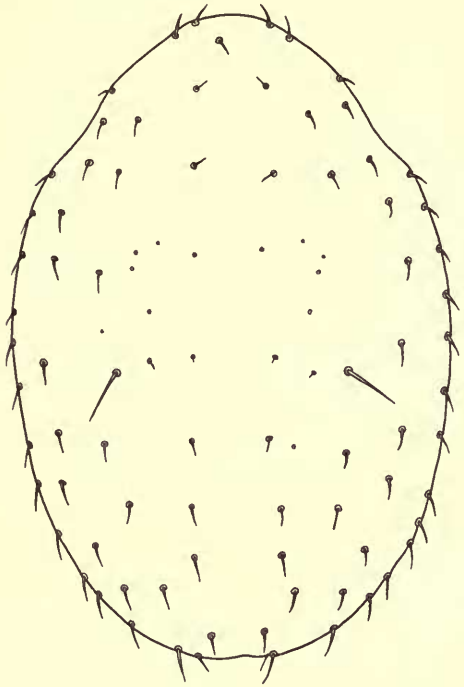
Trägårdh (1950) erected the genus *Heterodiplogynium* and proposed also a new subfamily, Heterodiplogyniinae, on the characters of a new species, *vestitum*, which differed from other diplogyniids in having along each side of the idiosoma a narrow sclerotized band clothed with small spinulae, and in possessing two groups of porose areas to the side of each peritreme.

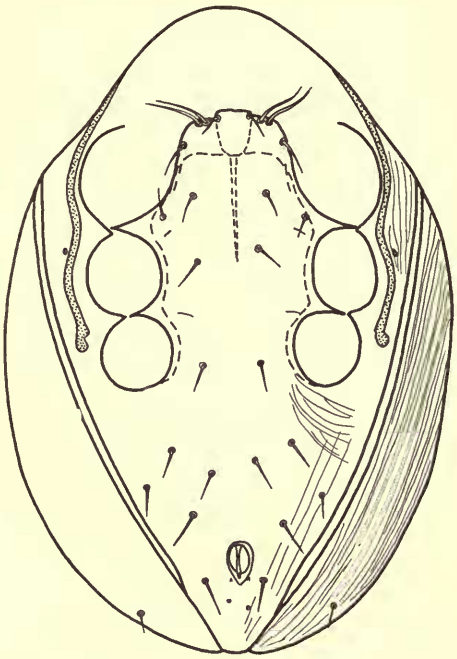
The present collection contains a single male which appears to be congeneric with Trägårdh's species in the structure of the ventral shields, chelicerae, and gnathosoma, but certainly lacks the minute spinulae of *vestitum*. It possesses the *areae porosae* of *vestitum*, but so also, apparently, do most other diplogyniids! Therefore I consider Trägårdh's erection of a new subfamily for *Heterodiplogynium vestitum* to be quite unjustified.

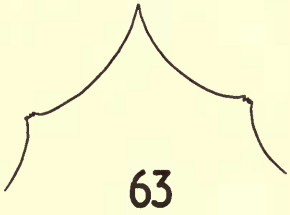
Heterodiplogynium secundum sp. nov.

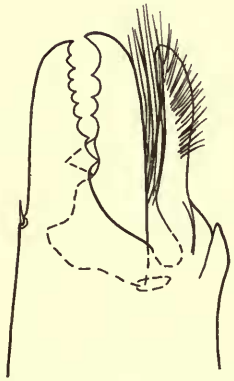
Male : Dorsal shield (518μ long × 371μ wide) without ornamentation. The chaetotaxy comprises only simple setae. The majority of the setae are from

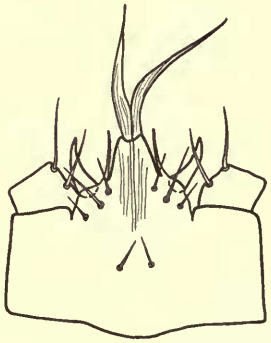
15–25μ long, and 14–15 pairs are situated on the margin of the shield posterior to the " shoulders ". One pair only, just posterior to the centre of the shield, is 35μ long. The central area of the dorsal shield bears only pores and a few minute setae (Text-fig. 59).











FIGS. 59–63. *Heterodiplogynium secunda* sp. nov., male. Fig. 59 dorsal shield. Fig. 60 venter. Fig. 61 venter of gnathosoma. Fig. 62 chelicera. Fig. 63 tectum.

The chaetotaxy of all the ventral shields is similar to that of *H. vestitum* Trägårdh. The sterniti-genital shield bears at its anterior margin one pair of short setae at the corners of the genital orifice and two pairs of closely-set long setae (Text-fig. 60). The remainder of the sterniti-genital region bears four pairs of setae and the ventri-anal area bears six pairs. The marginal shields bear one pair of short setae posteriorly. The stigma is situated opposite the centre of coxa IV, and the narrow granular peritreme extends anteriorly to the edge of the gnathosoma.

Venter of gnathosoma shown in Text-figure 61. Its structure is very similar to that of *H. vestitum* : the three rostral setae are arranged in an oblique straight line, and the centre one (the internal posterior rostral) is the longest. The capitular seta is simple. Corniculi curved but not pointed. Apart from three stout pilose setae on the palpfemur, all setae on the palp are simple and slender. Apotele two pronged. Fixed digit of chelicera with eight small teeth ; movable digit with one large basal tooth and three smaller ones. Arising from the base of the movable digit are two appendages, one finger shaped and strong, and the other laciniate (Text-fig. 62). The tectum is shown in Text-figure 63.

Leg I (354μ long) with some of the stouter setae pilose ; remainder simple. Legs II–IV with a pulvillus and two claws and having simple chaetotaxy : a few of the setae are slightly pilose.

Locality : A single male (1963.10.3.142) from a passalid beetle (2496) at Río Caura, Bolívar, May 1957.

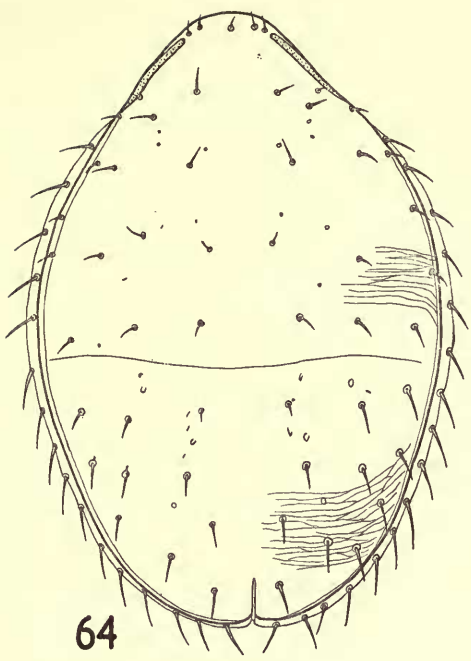
Genus ***BRACHYSTERNUM*** Trägårdh

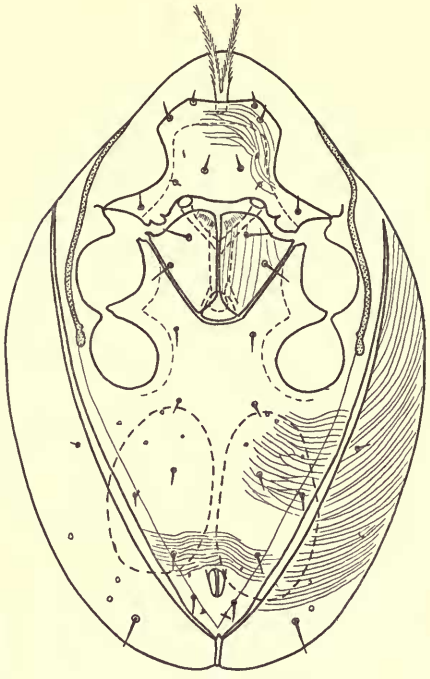
Brachysternum espinosai sp. nov.

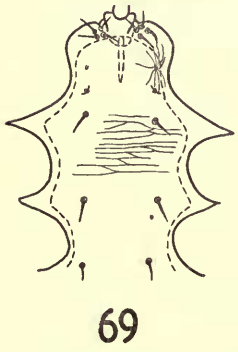
Female : Dorsal shield (890–900μ long × 620μ wide) with 27 pairs of rather short simple setae and one unpaired seta posterior to the verticals. Marginal shields with 16 pairs of longer and stouter setae. Ornamentation comprising very faint reticulations and a distinct but faint transverse dividing line medially. Posterior margin of dorsal shield deeply incised (Text-fig. 64).

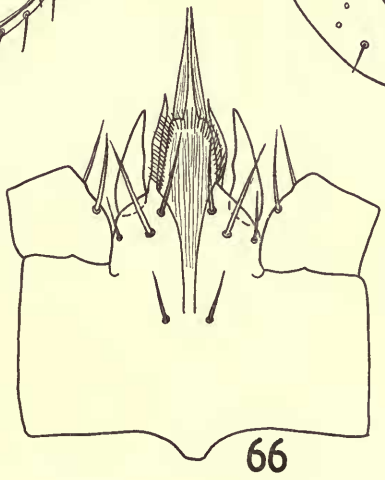
Tritosternum with a narrow base and pilose laciniae. Sternal and metasternal shields fused to form a single shield. Sternal setae I and II close together and situated obliquely at the antero-lateral margin of the shield. Setae III situated about two-thirds of the way down the centre of the shield. Sternal setae IV (the metasternals) situated on the postero-lateral extensions of the sternal shield (Text-fig. 65). Lateral shields longitudinally striated, and each bearing two pairs of simple setae in its anterior half. The ventral shield tapers sharply to a point posterior to the anus where the marginal shields meet also. Ventral shields with six pairs of short simple setae. Ventral portions of marginal shields with two pairs of setae. Peritreme extending anteriorly to beyond coxa I. All ventral shields ornamented with fine close striations and reticulations.

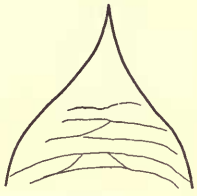
Venter of gnathosoma shown in Text-figure 66. All gnathosomal setae simple ; rostrals and internal posterior rostrals twice as long as external posterior rostrals and capitulars. Corniculi broad and tapering with a distinct swelling along the internal margins. Chaetotaxy of pedipalp simple. Apotele with two prongs.











FIGS. 64–71. *Brachysternum espinosai* sp. nov. Fig. 64 dorsum of female. Fig. 65 venter of female. Fig. 66 venter of gnathosoma of female. Fig. 67 chelicera of female. Fig. 68 tectum of female. Fig. 69 intercoxal region of male. Fig. 70 corniculus of male. Fig. 71 chelicera of male.

Fixed digit of chelicera with 11 small subequal teeth ; movable digit with one large basal tooth and eight irregularly-spaced small subequal teeth (Text-fig. 67). Tectum sharply pointed and with concave sides (Text-fig. 68).

Leg I (661μ long) without ambulacrum. Chaetotaxy comprising simple setae only ; longest on the tarsus and becoming shorter progressively towards the coxa. Legs II–IV with a pulvillus and two claws ; all setae simple.

Male : Dorsal shield (859μ long × 591μ wide) apparently the same as the female. Intercoxal region shown in Text-fig. 69. Situated on each side of the genital opening is a cluster of four short simple setae. Remainder of intercoxal region with three pairs of setae. Ventral shield posterior to coxae IV with four pairs of setae. Ventral portion of marginal shields with two pairs of setae.

Venter of gnathosoma and pedipalps similar in structure to the female. Corniculi with a similar median swelling, tapering finely distally (Text-fig. 70). Fixed digit of chelicera with about 14 small subequal teeth ; movable digit with one large basal tooth and nine small irregularly-spaced teeth. A broad membraneous appendage arises from the base of the movable digit (Text-fig. 71). Tectum differing from the female in that the lateral margins are not concave, and the tip is rounded. Legs similar to the female.

Locality : The holotype female (1963.10.3.143), allotype male (1963.10.3.144), and one male and nine female paratypes (1963.10.3.145–149) from *Hololepra humilis* (Col., Histeridae) (3207) ; and one paratype male (1963.10.3.150) from a passalid beetle (3256), San Juan de Manapiare, Amazonas, April 1958.

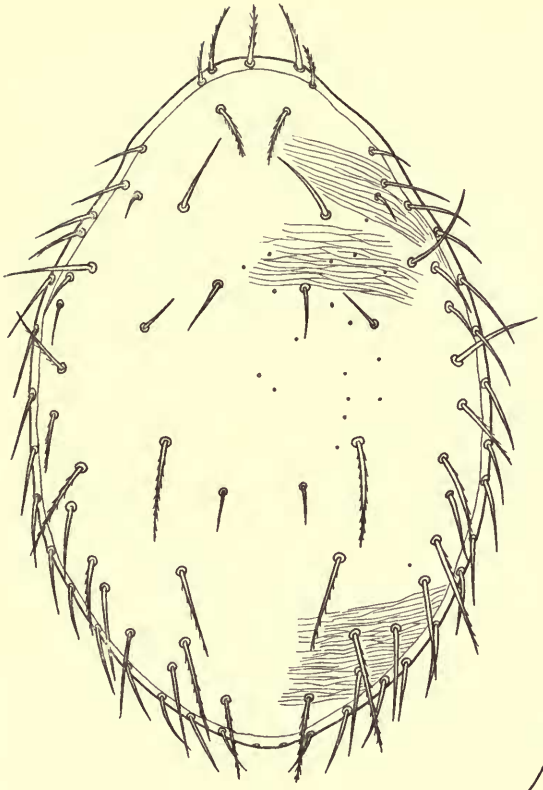
This species differs from the only previously-known representative of the genus, *Brachysternum acuminatum* Trägårdh, 1950, mainly in the chaetotaxy of the dorsal shield in both sexes, in the chaetotaxy of the intercoxal region of the male, and in the chaetotaxy of the venter of the gnathosoma.

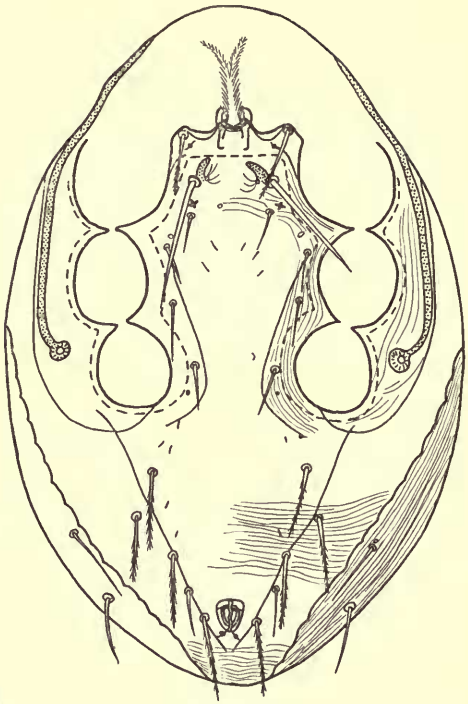
Brachysternum espinosai is dedicated to Dr. Espinosa who assisted Dr. Díaz-Ungría during the collecting of the material upon which this paper is based.

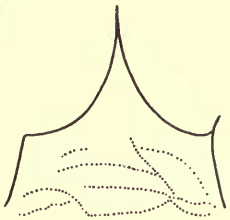
Brachysternum cornutum sp. nov.

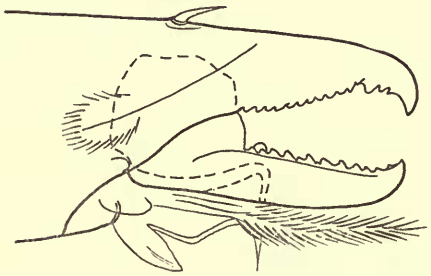
Male : Dorsal shield (826μ long × 550μ wide) with 39 pairs of setae and one unpaired seta at the vertex. The majority of the setae are long (75–125μ) and a number of pairs are finely pilose. The entire shield is finely reticulated (Text-fig. 72).

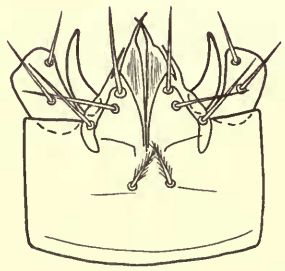
Tritosternum with pilose laciniae. The sterniti-genital region is instantly distinguishable from that of *B. acuminatum* Trägårdh and *B. espinosai* sp. nov. although fundamentally it is of the same type as *acuminatum*. The genital orifice appears squarish with two lateral incurved flanges. The anterior margin of the sterniti-genital shield is markedly concave (Text-fig. 73). Sternal setae I reach posteriorly to the pore associated with the short setae III. Setae II long (115μ) and extremely broad : at their bases, below the surface, two horn-like processes are directed anteriorly. Setae III–VI are simple. The endopodal region is conspicuously striated. The remainder of the venter is similar to that of *acuminatum* : posterior to coxae IV are five pairs of setae of which four are of equal length and the fifth is shorter ; and the marginal shield bears two pairs of setae. The form of the stigma











FIGS. 72–76. *Brachysternum cornutum* sp. nov., male. Fig. 72 dorsum. Fig. 73 venter. Fig. 74 venter of gnathosoma. Fig. 75 chelicera. Fig. 76 tectum.

and peritreme are almost the same as in *acuminatum*. The whole ventral surface is finely reticulated.

The venter of the gnathosoma is shown in Text-figure 74. The three pairs of rostral setae are long and simple, whilst the capitular setae are short and bipectinate. The corniculi are strongly curved with finely rounded tips. Chaetotaxy of pedipalp normal ; apotele with two prongs. Fixed digit of chelicera with about 14 small subequal teeth and one larger tooth. Movable digit with about 12 subequal teeth. The synarthrodial membrane is slightly longer than the movable digit. Associated with the membrane is a hyaline appendage (Text-fig. 75). Tectum as in Text-figure 76.

Leg I 228μ long, slender and with simple chaetotaxy. Legs II–IV with pulvilli and two claws. Chaetotaxy essentially simple, a few setae pilose along one margin.

Locality : A single male (1963.10.3.151) from a passalid beetle (2675), Río Caura, Bolívar, May 1957.

Genus ***TRIDIPLOGYNIUM*** Trägårdh

Tridiplogynium brenthi sp. nov.

Female : Dorsal shield (661μ long × 507μ wide) broadly oval in outline. Vertical and post-vertical setae long and slender ; two pairs of dorsal and two pairs of posterior marginal setae long with finely-pilose extremities ; remainder of margin with 14 pairs of short setae, and the remainder of the dorsum with a number of very fine short setae and pores (Text-fig. 77).

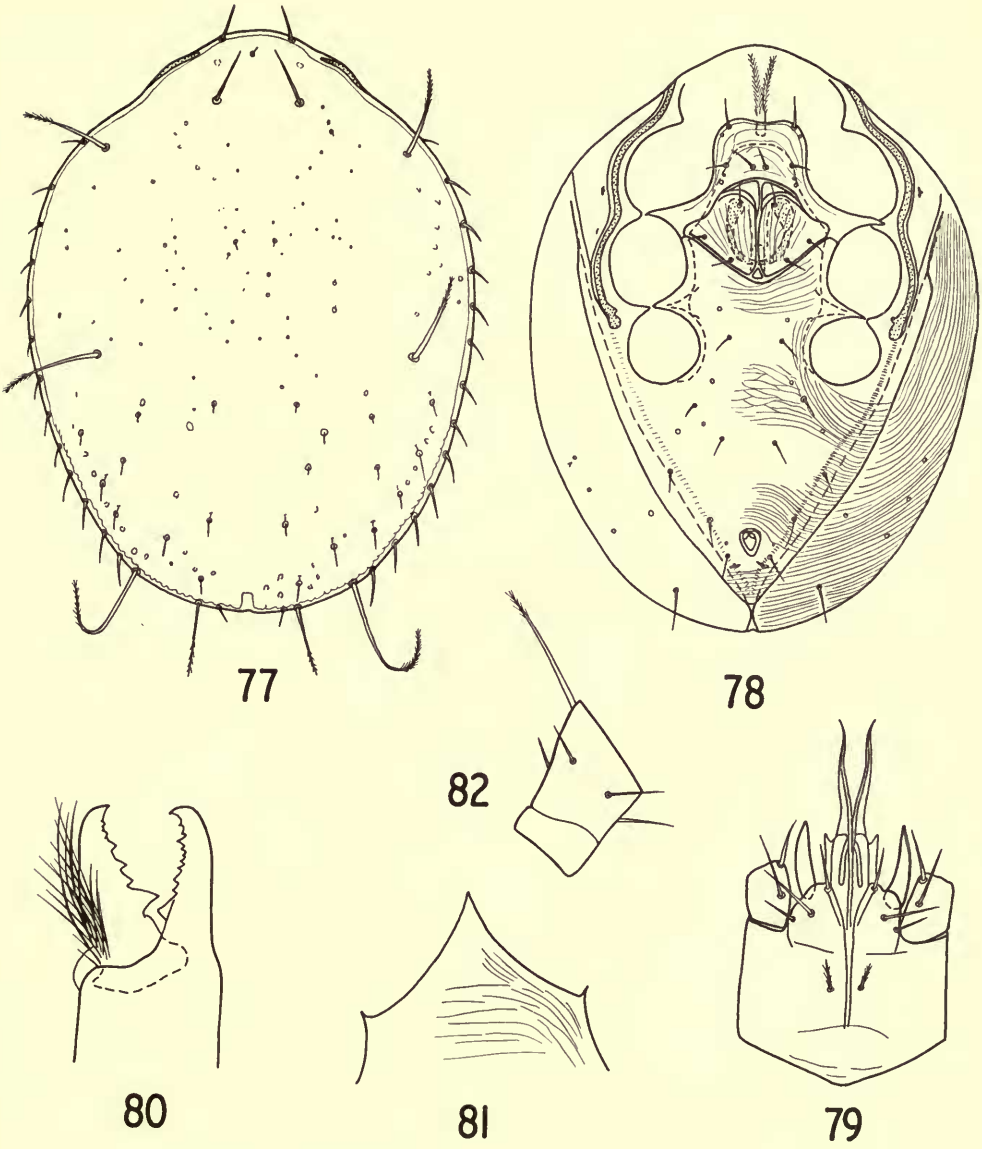
Tritosternum with a narrow base and pilose laciniae. Sternal shield strongly concave posteriorly and with long postero-lateral extensions, and bearing three pairs of setae (Text-fig. 78). Lateral shields with the three pairs of setae characteristic of the genus. The ventral shield extends almost to the posterior end of the idiosoma where it meets the junction of the broad ventral marginal shields. The ventral shield bears six pairs of setae posterior to the genital region, and the ventral marginal shields each bear at least one pair of setae. Peritreme extending anterior to coxa I. All ventral shields are striated.

Venter of gnathosoma as in Text-figure 79. Capitular setae short and pilose ; all rostral setae simple and longer. Corniculi tapering only in their distal thirds. Chaetotaxy of pedipalp simple ; apotele two pronged. Fixed digit of chelicera with ten subequal teeth ; movable digit with a large basal tooth and five smaller teeth. Movable digit with brush-like process just passing the tip of the digit (Text-fig. 80). Tectum pointed and with concave sides (Text-fig. 81).

Leg I 467μ long, with simple setae ; no ambulacrum. Legs II–IV each with a pulvillus and two claws. Femur II and genua III and IV each with a long distal seta dorsally (Text-fig. 82). Remaining chaetotaxy simple.

Locality : A single female (1963.10.3.152) on *Brenthus championi* Sharp (Col., Brenthidae) (2868), Caracas, November 1957.

This species differs from the type of the genus, *T. inexpectatum* Trägårdh, mainly in the chaetotaxy of the dorsal shield, in the form of the gnathosoma, and in possessing a long erect seta on legs II–IV, although it is conceivable that these setae were missing in Trägårdh's single example.



FIGS. 77–82. *Tridiplogynium brenthi* sp. nov., female. Fig. 77 dorsal shield. Fig. 78 venter. Fig. 79 venter of gnathosoma. Fig. 80 chelicera. Fig. 81 tectum. Fig. 82 femur II.

Genus *CRYPTOMETASTERNUM* Trägårdh

Cryptometasternum diazungriai sp. nov.

Female : Dorsal shield (540–591μ long × 310–371μ wide) without ornamentation; bearing 49 pairs of short simple setae and one unpaired seta at the vertex (Text-fig. 83).

Tritosternum narrow and delicate with finely-pilose laciniae. Sternal shield broadening out considerably posteriorly ; heavily sclerotized anterior and lateral margins. The three pairs of sternal setae are very short and fine : posterior pair near the centre of the posterior margin (Text-fig. 84). Metasternal setae very short. Lateral shields with two pairs of setae on the external margin. The ventral shield tapers sharply from the stigma to the anus and bears six pairs of simple setae. Stigma situated in line with the anterior part of coxa IV ; peritreme extending to the base of the gnathosoma.

Venter of gnathosoma shown in Text-figure 85. Capitular setae short and pilose ; other gnathosomal setae simple ; rostrals twice as long as posterior rostrals. Corniculi pointed. Chaetotaxy of pedipalp simple ; apotele two pronged. Fixed digit of chelicera with about 13 small subequal teeth, movable digit with one large basal tooth and about 15 small subequal teeth. Tectum as in Text-figure 86.

Leg I 498μ long, all setae simple, decreasing markedly in length from tarsus to trochanter. Legs II–IV with all setae short and simple ; ambulacra comprising a pulvillus and two claws.

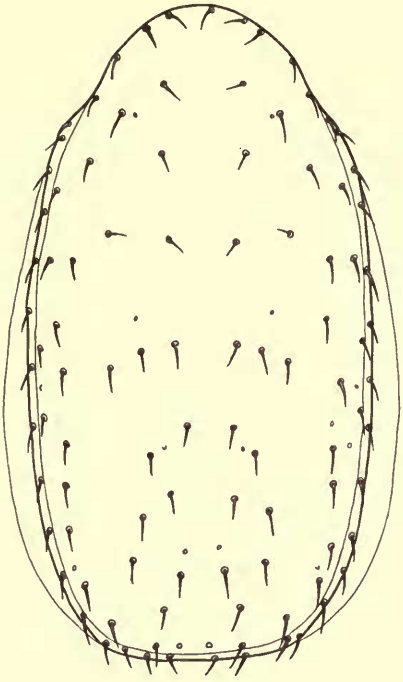
Male : Dorsal shield (540μ long × 340μ wide) similar in structure and chaetotaxy to the female. Intercoxal region shown in Text-figure 87 ; setae short and fine. Region posterior to the stigma with six pairs of simple setae as in the female.

Gnathosoma and pedipalps similar in structure to the female. Corniculi shorter and blunter than in the female and not symmetrical. Fixed digit of chelicera with 12 subequal teeth ; movable digit with the large basal tooth and 13 subequal ones, and possessing a small appendage arising from the base of the digit (Text-fig. 88). Tectum similar to that of the female, but rounded anteriorly and less angular.

Locality : The holotype female (1963.10.3.153), allotype male (1963.10.3.154), seven paratype females and five paratype males (1963.10.3.155–159) from *Dynastes* sp. (Col., Dynastidae) (2860), Caracas, August 1957.

The present species differs mainly from the three previously known members of the genus, *natalense* Trägårdh, 1950, and *derricki* and *queenslandense* Womersley, 1958, all keyed by Womersley (1958), in that the margins of the dorsal shield are not crenate as in *natalense* and *derricki*, and the dorsal shield bears 49 pairs of setae with none on the marginal shields, whereas in *queenslandense* the dorsal shield bears about 20 pairs, and the marginal shields seven or eight pairs.

Figs. 83–88. *Cryptometasternum diazungriai* sp. nov. Fig. 83 dorsum of female. Fig. 84 venter of female. Fig. 85 venter of gnathosoma of female. Fig. 86 tectum of female. Fig. 87 intercoxal region of male. Fig. 88 chelicera of male.



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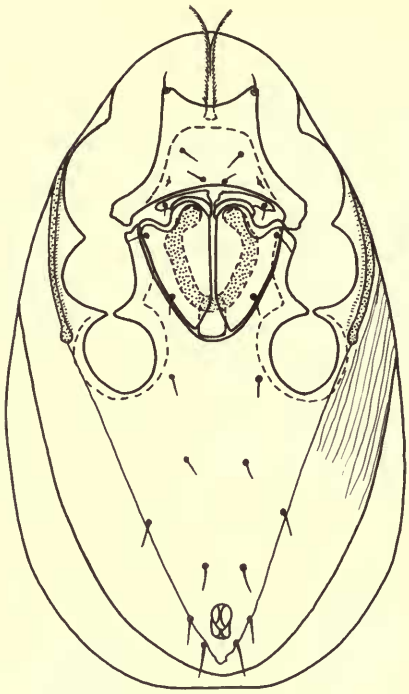

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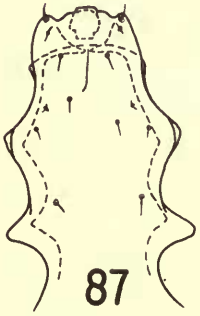

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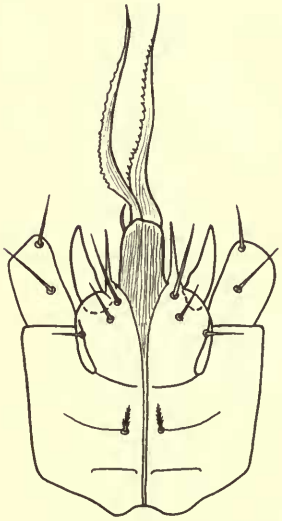

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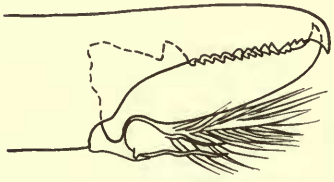

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Family Euzerconidae

Genus *EUZERCON* Berlese

Euzercon balzani Berlese

Euzercon balzani Berlese, A. 1888. Bull. Soc. ent. Ital. **20** : 203.

Female : Dorsal shield (1,013–1,392μ long × 775–983μ wide) heavily sclerotized and with fine reticulations around the entire margin (Text-fig. 89). The almost straight anterior margin bears two pairs of strong anteriorly projecting setae and a shorter unpaired seta, the latter usually to one side of the centre. Around each side of the dorsal shield are twelve strong setae up to 300μ in length approximately, all of which appear finely, though frequently sparsely, pilose. The whole shield has numbers of pores and the posterior half bears about a dozen or so pairs of very fine short setae (*c.* 20μ).

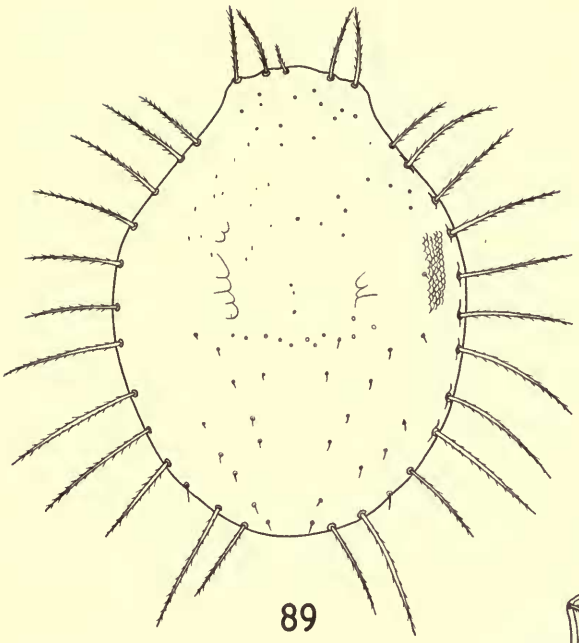
Tritosternum with a narrow base and pilose laciniae. Sternal shield approximately square with slightly concave lateral and anterior margins ; posterior projections extending to the metasternal setae, and posterior margin strongly concave (Text-fig. 90). The three pairs of sternal setae usually with fine pectinations. Metasternal setae similar to sternal setae but may lack pectinations. Latigynial and mesogynial shields fused with the ventral shield (Text-fig. 91). The ventral shield bears four pairs of setae, decreasing progressively in length posteriorly. Anal shield with two pairs of simple setae and several pores. The large metapodal shields, which extend posteriorly almost abutting the anal shield, bear two fine pairs of setae posteriorly. The stigma is situated between coxae III and IV and the peritreme extends to the anterior margin of coxa I. All ventral shields strongly sclerotized and striated.

Venter of gnathosoma as shown in Text-figure 92. The corniculi resemble slender blades with the inner margins serrated. The rostral setae are the stoutest and quite plain, although the posterior rostrals and the shorter capitulars may be lightly pilose. Palptarsal setae simple : remaining palpal setae with some fine pilosity. Apotele slender, two pronged. Fixed digit of chelicera with about 15 irregularly-shaped teeth ; movable digit with also about 15 subequal teeth and one large basal tooth. Fixed digit with a fringed membrane in its basal half ; movable digit with two large laciniate excrescences directed anteriorly, and the more distal one following the curve of the digit. The synarthrodial membrane at the base of the movable digit is cone shaped (Text-fig. 93). Tectum triangular with curved sides (Text-fig. 94).

Leg I about 880μ long, without ambulacrum ; some setae with fine pectinations. Legs II–IV stout, each with a pulvillus and two claws ; setae mainly stouter than on leg I, and some with fine pectinations.

Male : Dorsal shield (920–1,000μ long × 705–760μ wide) similar in structure and chaetotaxy to the female.

Figs. 89–96. *Euzercon balzani* Berlese. Fig. 89 dorsal shield of female. Fig. 90 venter of female. Fig. 91 intercoxal region of female. Fig. 92 venter of gnathosoma of female. Fig. 93 chelicera of female. Fig. 94 tectum of female. Fig. 95 intercoxal region of male. Fig. 96 venter of gnathosoma of male.



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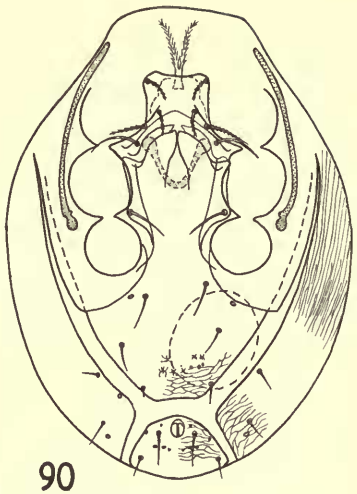

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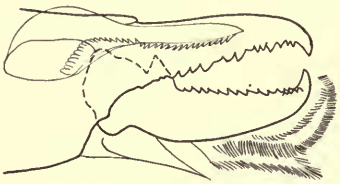

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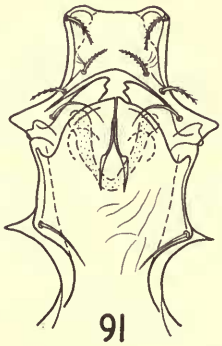

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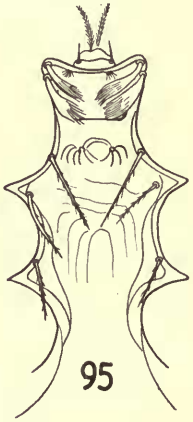

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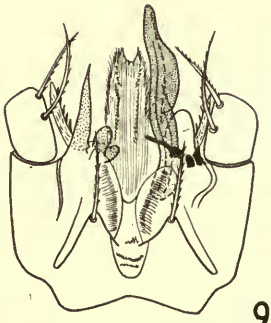

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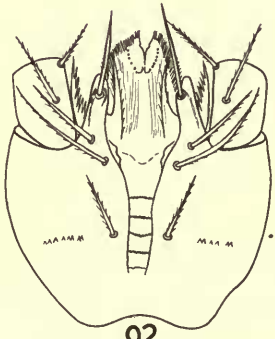

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The sterniti-genital region (Text-fig. 95) bears five pairs of setae : the two anterior pairs being stout and brush like, the remaining three pairs being slender and finely pilose. The remaining sclerotization and chaetotaxy of the venter is similar to the female.

Venter of gnathosoma shown in detail in Text-figure 96. Corniculi with inner margins serrated as in the female. Chaetotaxy of pedipalps similar to the female. The tectum and chelicerae also are very similar to the female.

Leg I 750μ long, without ambulacrum : some setae with fine pectinations. Legs II–IV stout, similar to the female.

Distribution : Berlese (1888) based his description of *E. balzani* on specimens taken under rotting leaves at Río Apa, Paraguay, and Lombardini (1940) redescribed and figured the species. Turk (1948), in recording *balzani* from a passalid beetle at Piarco, Trinidad, establishes the first record of this species from a beetle host. The present collection contains many males and females from the following beetles : *Passalus ? flascala* Perch (Col., Passalidae) (1387), Pie del Cerro, January 1956 ; Passalidae (2257 and 2258), Copey, September 1956 ; Passalidae (2329), Mérida, 3 December 1956 ; Passalidae (2639, 2640, 2651, 2675 and 2676), Río Caura, Bolívar, May 1957 ; *Passalus ? flascala* (2872, 2932 and 2933), Cabure, 12–14 December 1957 ; Passalidae (3256), San Juan de Manapiare, Amazonas, April 1958.

Family Klinckowstroemiidae

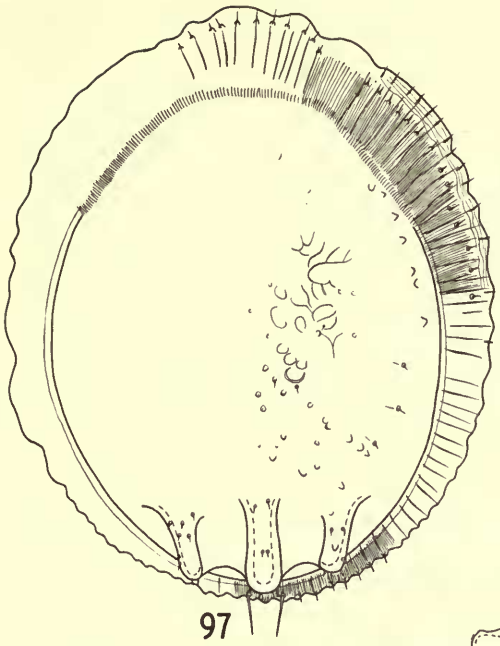
Genus *ANTENNURELLA* Berlese

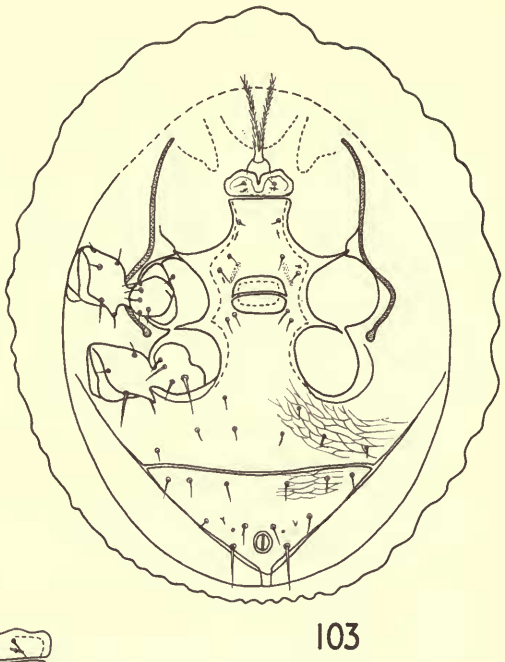
Antennurella trouessarti Berlese, 1904

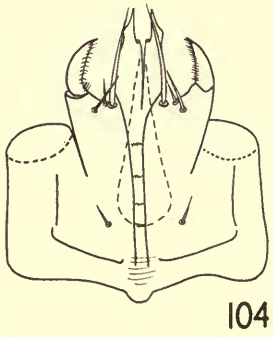
Antennurella trauessarti Berlese, A. 1904. Redia **1** : 268.
Antennurella trauessarti Lombardini, G. 1940. Bull. Soc. ent. Ital. ***72*** : 10, redescription, figs.

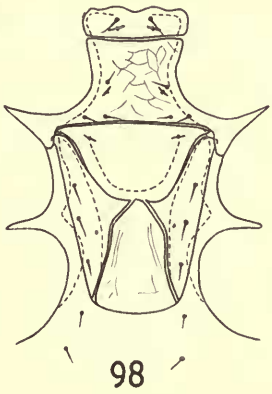
Female : Dorsal shield (1,080–1,140μ long × 930μ wide) encircled completely by a translucent hood-like extension of the shield which is up to *c.* 125μ broad anteriorly, decreasing to *c.* 15μ broad posteriorly (Text-fig. 97). The ornamentation of the shield comprises rather irregularly-scattered small tubercles, and posteriorly, three backward-projecting finger-like tubercles which extend slightly beyond the margin of the dorsal shield. The chaetotaxy of the dorsal shield comprises barely-discernible minute setae arising from some of the small tubercles, while the hood-like extension to the shield bears a number of short fine setae situated radially, and one pair of stouter setae, *c.* 75μ long, postero-medially.

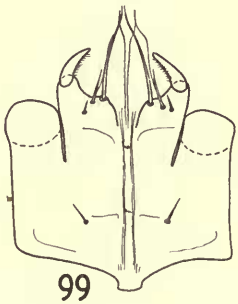
Tritosternum with a pentagonal base and two pilose laciniae. Jugular shields coalesced with each other, and each bearing a simple slender seta. Sternal shield as broad as long, very finely reticulated, and bearing three pairs of simple setae ; one pair being central and the other two pairs on the posterior margin of the shield (Text-fig. 98). Posterior margin of sternal shield slightly concave ; the sternogynial shield hinged to this margin. Latigynial shields each with three simple setae ; mesogynial shield three-quarters as broad as long, faintly reticulated. Ventral shield posterior to coxae IV with four pairs of simple setae. Ventrianal shield with five pairs of simple slender preanal setae, paranal setae stouter and longer,

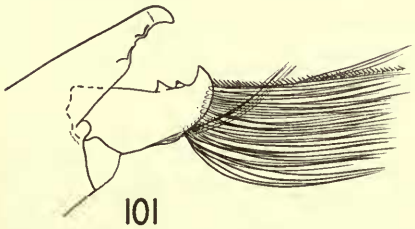


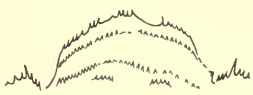


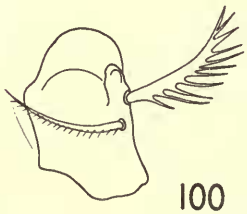












FIGS. 97–104. *Antennurella trouessarti* Berlese. Fig. 97 dorsal shield of female. Fig. 98 intercoxal region of female. Fig. 99 venter of gnathosoma of female. Fig. 100 right palptrochanter of female, ventrally. Fig. 101 chelicera of female. Fig. 102 tectum of female. Fig. 103 venter of male. Fig. 104 venter of gnathosoma of male.

postanal seta absent (see Text-fig. 103 of male). Stigma situated between coxae III and IV, peritreme finely granular and extending anteriorly to coxae I. Ventral shields heavily sclerotized and with fine reticulations. Endopodal and exopodal shields fused with the ventral shields.

Venter of gnathosoma shown in Text-figure 99. Corniculi with a fringe on their inner margins. Rostral setae long and stout, internal posterior rostrals longer than external posterior rostrals. Chaetotaxy of pedipalp simple except for the trochanter which bears two unusually-developed setae on its inner ventral margin : one being antler-like with about ten tines, the other pilose along one margin (Text-fig. 100). Apotele two pronged and slender. Fixed digit of chelicera with three teeth, less well developed in some specimens ; movable digit with two prominent teeth and a broad erect brush-like appendage, one-and-a-half times the length of the digit (Text-fig. 101). Tectum very difficult to discern, but comprising several transverse recurved rows of fine denticles, the lateral ones being the more prominent (Text-fig. 102).

Leg I with simple setae more dense on the tip of the tarsus ; without ambulacrum. Legs II–IV stout ; each with a well developed pulvillus and two claws. Femora each with an internal spur (as illustrated for the male, Text-fig. 103). Numbers of the setae with faint pilosity. Tarsi II–IV each have an erect straight dorsal seta distally.

Male : Dorsal shield (1,090–1,190μ long × 850–950μ wide) very similar in structure and ornamentation to the female.

The venter is shown in detail in Text-figure 103. Tritosternum as in the female. Jugularia coalesced with each other but with a median suture ; each bearing a single seta. Sterniti-geniti-ventral region entire ; intercoxal region bearing six pairs of short simple setae. Region posterior to coxae IV with four pairs of simple setae. Genital aperture, located between coxae III, oblong-oval in shape, wider than long, and closed by two shields. Ventrianal shield as in the female : five pairs of short slender preanal setae, a pair of longer paranal setae, postanal seta absent. Stigma between coxae III and IV ; peritreme extending forward to coxa I.

Venter of gnathosoma shown in Text-figure 104 : similar to that of the female, apart from one factor which is constant in the four females and five males in the present collection : that is in the female the internal posterior rostral seta is longer than the external posterior rostral, but in the male the external posterior rostral is longer than the internal. Chaetotaxy and apotele of the pedipalp as in the female. Chelicerae as in the female. Tectum similar to the female.

Chaetotaxy of the legs as in the female.

Distribution : Berlese (1904) described this species from a single male on *Passalus* sp. at Parà, Brazil. The present collection contains three males and two females from a passalid beetle (3256), San Juan de Manapiare, Amazonas, April 1958 ; one male from *Passalus ? flascala* Perch (Col., Passalidae) (2257), Copey, September 1956 ; one male from a passalid (2675), Río Caura, Bolívar, May 1957 ; and one male and one female from *Passalus ? flascala* (2872) at Cabure, 12 December 1957.

Genus *KLINCKOWSTROEMIELLA* Turk

Klinckowstroemiella prima Turk, 1951

Klinckowstroemia sp. (sp. n. ?) Turk, F. A. 1948. Proc. zool. Soc. Lond. **118** : 96.
Klinckowstroemiella prima Turk, F. A. 1951. Ann. Mag. nat. Hist. (12). **4** : 409.

Female : Dorsal shield (764–848μ long × 550–600μ wide) smooth with areas of very fine reticulation and bearing some extremely fine short setules arising from pores. Anteriorly a hood-like extension of the dorsal shield (which is characteristic of the family) bears two pairs of fine setae each arising from a smooth tubercle (Text-fig. 105).

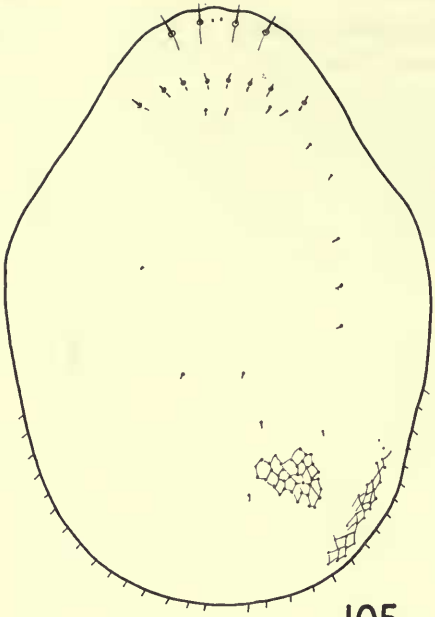
Tritosternum with a broad triangular base mainly concealed by the fused jugular shields. Laciniae strong with fine pilosity (Text-fig. 106). The single jugular plate bears one pair of short setae. Sternal shield trapezium shaped, fused with the endopodal plates, and bearing three pairs of simple setae. Sternogynial shield bearing one pair of pores and hinged to the posterior margin of the sternal shield. Latigynial shields with usually four pairs of short setae (as figured), but in a few specimens the setae are not paired, and odd combinations occur with six being the maximum. In these cases all sternal setae are longer than in the typical form. Mesogynial shield dome shaped. Ventral shield posterior to the genital area entire, finely reticulated, and bearing, in the figured specimen, 56 unpaired setae, of which the paranals are the longest. Stigma situated between coxae III and IV ; peritreme finely granular, extending to the anterior region of coxa II. Lateral to the stigma are five to seven denticles. Fused peritrematal-metapodal shield abutting the ventral shield.

Venter of gnathosoma shown in Text-figure 107. Corniculi bifid anteriorly. Rostral setae long and slender ; internal posterior rostrals longer than external posterior rostrals ; capitular setae short. Chaetotaxy of pedipalp simple except for the trochanter which bears two strongly-developed setae on its inner margin: one being antler like with about ten tines, the other pilose along one margin (Text-fig. 108). Apotele two pronged. Fixed digit of the chelicera with two large and four small teeth. Movable digit with two large teeth only, and with a broad erect brush-like process one and a half times the length of the digit (Text-fig. 109). The tectum, which is very difficult to discern, is shown in Text-figure 110.

Leg I slender ; with slender setae, and without ambulacrum. Legs II–IV stouter, with ambulacra ; femora each with a broad crassate ridge which is more pronounced in femora III and IV (Text-fig. 111).

Male : Dorsal shield (733–795μ long × 507–550μ wide) similar in structure and chaetotaxy to the female.

Except for the intercoxal region, which is shown in detail in Text-figure 112, the ventral sclerotization and chaetotaxy are as in the female. The almost circular genital aperture, which is situated between coxae III, is covered by two shields divided laterally. The sternal shield anterior to the genital aperture bears three pairs of simple setae, whilst posterior to the aperture, very minute spicules only are present. The entire sternal shields are finely reticulated.



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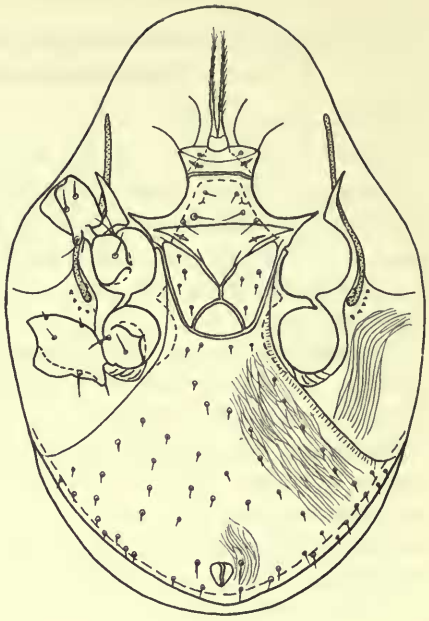

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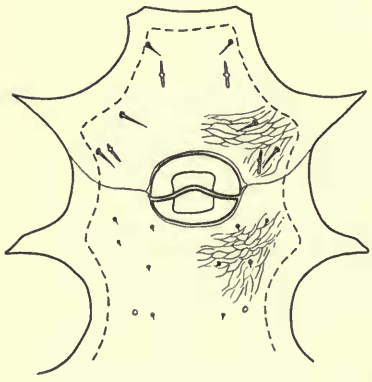

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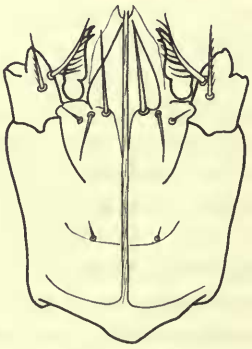

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Venter of gnathosoma basically the same as in the female, although generally the internal posterior rostrals are longer than in the female. Chaetotaxy of the pedipalp as in the female. Chelicerae and tectum also as in the female.

Chaetotaxy of all legs, and protuberances on femora II–IV as in the female.

Distribution : Turk's (1948) specimens are from a passalid beetle collected at Trinidad, British West Indies. The present collection contains 16 males and 54 females on passalids (2612, 2639, 2640 and 2676), Río Caura, Bolívar, May 1957 ; and one male and four females on a passalid (3256), San Juan de Manapiare, Amazonas, April 1958.

The above description is based entirely on the specimens from Venezuela. I have, through the kindness of Dr. F. A. Turk, examined the types of *K. prima*, and although the size of his specimens (one male 962μ long × 722μ wide, and four females 953–983μ long × 711–743μ wide) far exceeds the range of the Venezuelan material, there are no clear differences in the structure or chaetotaxy of the dorsum. venter, gnathosoma, or legs.

Family Paramegistidae

Genus ***ECHINOMEGISTUS*** Berlese

Echinomegistus narvaezi sp. nov.

Female : Dorsal shield (930–952μ long × 805–826μ wide) heavily sclerotized and subcircular in outline (Text-fig. 113). Two simple setae situated vertically are probably the only setae actually located on the dorsal shield, although a small number of extremely minute setules may arise from some of the numerous pores and minute warts which are spread over the entire shield. On the interscutal membrane between the dorsum and venter of the mite is a narrow continuous strip of cuticle extending posteriorly from the region of coxae III, and bearing in the region of 96 stout setae, of which every second or third seta is longer than the intermediate ones.

The tritosternum has a narrow conical base and pilose laciniae. Jugular shields trapezium shaped and bearing a single pair each of setae and pores ; the setae being noticeably stouter than the other sternal setae (Text-fig. 114). In some specimens the inner corners of the jugularia are rounded, therefore the shields are further apart. Sternal setae II, III and IV are situated on the endopodal shields ; the latter extending till they meet medially. Sternogynial shield divided medially. Latigynial shields, bearing two pairs of simple setae, hinged to the ventral shield to a variable degree : in some specimens there is almost no trace of a division between the latigynial and sternal shields. Mesogynial shield in the form of an isosceles triangle. Ventral shield posterior to the genital area flask shaped and bearing between 25 and 30 pairs of strong lanceolate setae *c.* 75μ in length (Text-fig. 115). Posterior to the anus, and on the border of the ventral shield, are from four to five

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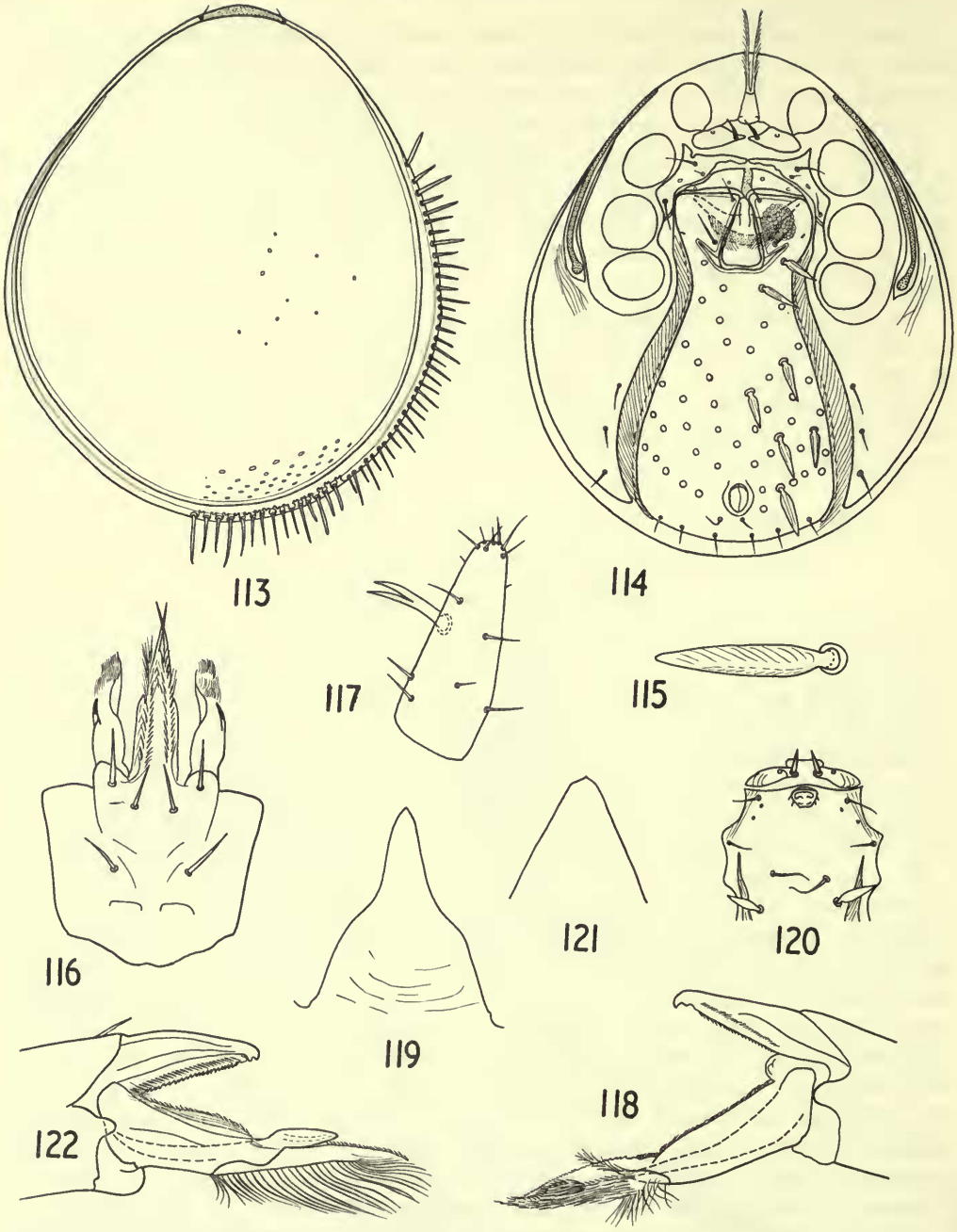
Figs. 105–112. *Klinckowstroemiella prima* Turk. Fig. 105 dorsum of female. Fig. 106 venter of female. Fig. 107 venter of gnathosoma of female. Fig. 108 palptrochanter of female. Fig. 109 chelicera of female. Fig. 110 tectum of female. Fig. 111 right femur IV of female, ventrally. Fig. 112 intercoxal region of male.



FIGS. 113–122. *Echinomegistus narvaezi* sp. nov. Fig. 113 dorsum of female. Fig. 114 venter of female. Fig. 115 ventral seta of female. Fig. 116 venter of gnathosoma of female. Fig. 117 fused palp tarsus and tibia of female, ventrally. Fig. 118 chelicera of female. Fig. 119 tectum of female. Fig. 120 genital region of male. Fig. 121 tectum of male. Fig. 122 chelicera of male.

pairs of fine simple setae. The stigma is situated opposite coxa IV and the peritreme extends in a smooth curve to the centre of coxa I. The broad posterior prolongation of the metapodal shields tapers to terminate level with the posterior margin of the anus. The inner margin of the metapodal shield bears three or four simple slender setae.

Venter of gnathosoma shown in Text-figure 116. Corniculi membranous with a finger-like process midway. Rostral setae modified into long slender laciniate processes ; posterior rostral and capitular setae simple and of equal length. Palp tarsus and tibia fused, and with two-pronged apotele situated midway on the segment (Text-fig. 117) ; chaetotaxy of pedipalp simple. Fixed digit of chelicera slender, with two rows of fine saw-like teeth ; one row anteriorly, the other posteriorly, directed (Text-fig. 118). Movable digit with two excrescences, one long and membranous with a finely-serrated margin, the other brush-like and filamentous ; digit with saw-like teeth similar to the fixed digit. Tectum regular in outline, conical-triangular with a construction midway (Text-fig. 119).

Leg I (*c.* 1,030μ long) without ambulacrum, slender ; chaetotaxy simple. Legs II–IV stouter ; chaetotaxy comprising shorter setae than leg I, a few setae, however, pilose distally.

Male : Dorsal shield (826–900μ long × 682–795μ wide) essentially the same as in the female. Stout interscutal setae equal in number and form to the female.

The genital region is shown in detail in Text-figure 120. Jugularia somewhat similar to those of the female ; the setae on these shields being stouter than the remaining sternal setae. Genital aperture small, situated between coxae II. Three pairs only of simple setae in the genital region. Ventral shield posterior to the genital area flask-shaped as in the female, but bearing only 21–24 pairs of strong lanceolate setae. Posterior to the anus, and on the border of the ventral shield, are four pairs of fine simple setae. Stigmata, peritremes and metapodal shields as in the female, and with also three pairs of simple setae on the inner margin of the metapodal shield.

Venter of gnathosoma essentially the same as in the female. Pedipalp as in the female. The tectum and chelicera are shown in Text-figs. 121 and 122 respectively.

Leg I without ambulacrum ; legs II–IV with a pulvillus and two claws. Chaetotaxy of legs similar to the female.

Localities: The holotype female (1963.10.3.238) and allotype male (1963.10.3.237) and 53 paratypes of both sexes (1963.10.3.239–248) from *Encaladus gigas* Bonelli (Col., Carabidae) (2236), Cerro Atagua, Margarita, Venezuela, 27 August 1956 ; and one paratype male (1963.10.3.249) from *Passalus flascala* Perch (Col., Passalidae) (2256), Margarita, September 1956.

Echinomegistus narvaezi is obviously related to *E. wheeleri* (Wasm.) which is figured by Berlese (1904) and also by Trägårdh (1943). The latter author, who examined specimens from Copenhagen Museum, commented favourably on Berlese's drawing of the venter of *wheeleri*. The present species differs from *wheeleri* in possessing far less setae ventrally, both on the geniti-ventral shield and the metapodal shields, and also on the interscutal cuticle around the posterior half of the mite. *E. wheeleri* is also a larger species.

Echinomegistus narvaezi is dedicated to Senor Heraclio Narváez Lafonzo, Governor of Isla Margarita.

SUMMARY

Twenty-six species of mesostigmatid mites associated with Venezuelan Coleoptera and Hemiptera are described and figured. The following sixteen species are considered new to science :

Zygoseius tectus sp. nov.
Gaeolaelaps circularis sp. nov.
Hypoaspis passali sp. nov.
Coleolaelaps metasternalis sp. nov.
Coleolaelaps coxalis sp. nov.
Coleolaelaps striatus sp. nov.
" *Coleolaelaps* " *granulatus* sp. nov.
" *Coleolaelaps* " *latisternalis* sp. nov.
Brachytremella womersleyi sp. nov.
Trichodiplogynium carlosi sp. nov.
Heterodiplogynium secundum sp. nov.
Brachysternum espinozai sp. nov.
Brachysternum cornutum sp. nov.
Tridiplogynium brenthi sp. nov.
Cryptometasternum diazungriai sp. nov.
Echinomegistus narvaezi sp. nov.

ACKNOWLEDGEMENTS

I should like to thank Dr. Díaz-Ungría for putting his collection of Acari at my disposal, and Dr. G. Owen Evans for valuable criticisms and for reading the manuscript.

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